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BY
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DENMARK

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SUMMARY

Since the introduction of New Public Management (Hood, 1991, 1995), benchmarking has emerged as a tool useful in the regulation of organizations not exposed to traditional market mechanisms (e.g. Pollitt, 1995). On the other hand, competition has also encouraged market-oriented organizations to benchmark their performance against their competitors, or with best practices within a sector (Otley, 1994, p. 295). These two applications exemplify benchmarking in terms of "compulsory" and "voluntary" adoption, respectively (Bowerman *et al.,* 2002). But what happens when the two tools are combined, and require benchmark-regulated organizations to learn from each other's practices? Initially, this way of using one tool to solve many tasks might seem like a good idea, but it is not without challenges and that is what forms the outset of this thesis.

This Industrial PhD project is supported by the Danish District Heating Association and has the Danish district-heating sector as its empirical domain. The thesis itself is conducted through an interpretive approach to describe and explain why and how the sector has arrived at its present status, as well as why and how a group of organizations within the sector is responding to a particular re-regulative measure in the form of network benchmarking. This is an interesting situation, as the re-regulative measures have not yet materialized, allowing me to study the situation 'in the making' (Latour, 1987).

A common denominator of this thesis is benchmarking, as the institutional pressure from regulators for benchmark regulation of the sector is believed to influence the empirical setting. The concept of benchmarking is well researched and a literature research on 'benchmarking' is performed in chapter two to set the scene.

Analyzing the sector's history contributes to the third chapter. Here the result is presented in the thesis's first article, where we mobilize the conceptual framework of McAdam and Scott (2005), combining movement theory and organizational theory. The focus is especially on how movement-like behavior by cost-conscious citizens developed into formal district-heating entities and how these are challenged and destabilized by emergent processes. The research agenda is of special interest since the sector, long noted for its individualism and entrepreneurial spirit, has become highly institutionalized and structured. This first article contributes to the growing area of research linking two fields of scholarship – the study of organizational theory and social movements.

The application of McAdam and Scott's framework (2005, pp. 19-38) in this study has successfully mirrored the illustration of their framework and has proven its value by adding texture to a common text and bringing new perspectives not only to

a sector's history, but also to the understanding of infrastructure development. The framework has demonstrated its ability to encompass structures and processes, as well as established and emergent organizations, transgressive contention and institutionalized authority, and helps explain the connections between local or specialized fields and broader societal systems.

McAdam and Scott have used and illustrated the power and generality of their framework by applying it to two cases in their work (2005, p. 19-38), where they conclude the framework was helpful, and is likely to find applications to other times and places. Den Hond and De Bakker have *partly* mobilized the framework of McAdam and Scott (2005), concluding, 'We have shown that the social movement literature and institutional change literature have several interesting points to offer and could well be combined' (Den Hond & De Bakker, 2007, p. 920).

But apart from Den Hond and De Bakker (2007) and McAdam and Scott's (2005) two illustrative cases, 'the framework has not been used as the guiding framework for systematic studies of the emergence of and development of movement or other forms of organization' (according to private correspondence with the authors, 7th of April 2014), despite it being widely cited. Or, in other words, the application of the *complete* framework is, according to the authors' knowledge (beside their own two illustrative cases), the first ever.

The study has also demonstrated how the framework of McAdam and Scott (2005) may be applied to help 'assess and systemize claims from qualitative and historical works about movement effects and the relationships between movements, institutional contexts and outcomes' as asked for by Schneiberg and Lounsbury (2008, p. 650). Additionally, the study has demonstrated how the same framework may help to 'analyze movements as a political condition for diffusion and other institutional processes' – also asked for by Schneiberg and Lounsbury (2008, p. 650).

In the studied organizational field, the movement could act freely in the public sphere on behalf of its 'members' and without interruption from the authorities. This was the case until the authorities saw the movement's physical assets as a way to increase taxes and levies, and at the same time act in the interest of society in general with regard to CO_2 emissions, infrastructure, and a safer energy supply. Until then, the movement used self-regulating mechanisms as well as market mechanisms in the interest of its members. This study has also confirmed the Danish district heating movement to be a rare and early example of a 'rational social movement' as opposed to the more commonly known examples of class conflict and cultural change movements.

In the two following articles, we study a particular group of organizations known within the sector as the "six-city group". They have embarked on a voluntary

benchmark model project, where we study their efforts by observing their meetings and through personal interviews. The first of these two articles is found in chapter four, and highlights *why* they have embarked on this project by applying the framework of Oliver (1991) to study their strategic responses while they are awaiting re-regulation.

When the expectation is that of being exposed to future benchmark regulation, a natural response could be to prepare for it with the available resources. And in so doing, it would also be obvious to analyze possible consequences and see if there is room to maneuver and to impact the future introduction of said regulation. The case study shows how a particular network of organizations with uniform institutional logic was able to negotiate and agree upon strategies to reach a special form of benchmarking practice, namely network benchmarking (Kyrö, 2003, 2006), as a particular way of voluntary benchmarking (Bowerman *et al.*, 2002).

Additionally, this attitude could demonstrate not only a positive response but also a proactive approach. When organizations already have an established and operating network, it is even easier to carry on with a network benchmarking by taking advantage of direct interaction based on trust and communication. Network benchmarking among companies could therefore be regarded as both the rationale and the medicine to explain why companies enter into such co-operation.

Resources play an important role in the work of Oliver (1991) as in 'resource dependency' – not only to establish hands on scarce resources, but also as a scope condition as inadequate organizational resources 'limit the ability to conform to institutional requirements' (Oliver, 1991, p. 159). Empirical evidence from this study supports that scope conditions are of great importance when resources are scarce and the request for resources is high in the individual organization not only to find ways to cope with the requirements, but also for financing the collaboration with others in the quest for finding a way to comply. This is the fact for the majority of the scattered and many members of the Danish District Heating Association.

The study illustrates 'the processes at work in the transitional period, during which successful movement objectives are 'handed off' to legislatures and the public agencies for follow-through and implementation' (Scott, 2008, p. 195), and furthers the insight into 'the role of organizational self-interest and active agency' (Oliver, 1991, p. 145). While the organizations are awaiting the re-regulation to materialize, they are acting but even though some diverging institutional logics among the participating organizations exists, they are able to successfully negotiate and agree upon a unified benchmarking framework and to implement this into their individual management control systems.

This shows that despite the absence of law-enforced benchmarking, they are willing to change from a self-centered institutional logic to a more cooperatively centered

institutional logic, as they consider such a change will have overall benefit for them. The organizations thereby assess the net benefits to exceed the negative aspects such as spending of time and resources, as well as exposing the organization's merits towards its own stakeholders, as well as towards the other networking organizations.

Network benchmarking could also be seen as a form of voluntary disclosure where the participating organizations may gain financial or quality improvement and organizational learning from self-reported problems when being able to compare their own performance to others. This is possible only if ranking is veiled and confidentiality towards the public is assured. A direct consequence of this is regarding the "Swiss army knife"-like style of thinking of regulators in the public sector where they should consider benchmark regulation to be used *either* for 'knowledge sharing and learning' *or* 'regulation and governing', as both at the same time seems contradictory.

The last article of the thesis is found in chapter five, and highlights *how* the "six-city group" of companies executes the benchmark model project by applying the framework of Kasperskaya (2008). When synthesizing the findings, we conclude that organizations responding to the same institutional stimuli may employ the same tactics during the institutionalization of new initiatives, but it is worth remembering that the six studied sub-units or case organizations formed part of an existing coalition and presumably have a mutual interest. This could seem contrary to findings in the study by Kasperskaya (2008), but on the other hand, this was performed as a multi-case study with two cases where the organizations had no cooperation or mutual interest. The six-city benchmark project has shown how the use of a standardized chart of accounts may be employed by different companies within a sector as a parallel to their ordinary accounting.

The empirical evidence also points to the multitude of possible explanations of why the six-city members not only initiated the benchmark model project, but also how it became successfully implemented. Although it is not obvious which is the most or least important, one of them was to learn benchmarking to stay ahead of the re-regulation. Another was to be prepared when the re-regulation is about to happen but also to be able to impact 'the forging of tomorrow's rules' (Scott, 1993). Certainly, the use of benchmarking towards superiors as well as stakeholders is important for legitimacy reasons. Towards own organization, the use of benchmarking could also be a new tool to set a fresh agenda.

The focus of Braadbaart & Yusnandarshah (2008) is on public sector benchmarking, where the problems of data quality, comparability, and design of meaningful performance indicators related to internal accounting systems are important, which seems to be relevant also for organizations participating in collaborative voluntary benchmarking projects as the six-city benchmark project.

The way in which information is interpreted and operationalized in the six-city benchmark project could indicate the role of 'economy-of-scale' in regard to available resources. In addition, the six-city project shows how a new benchmarking model is negotiated in the network to reach a common understanding and use.

Danish district heating companies are very heterogeneous due to factors like type, size, location, and ownership. To compensate for this heterogeneity, the sector, in agreement with the authorities, has prepared a standardized chart of account. When introducing a new artifact such as a standardized chart of accounts to a sector, it could look like an easy and straightforward task for the organizations to implement. But the incorporation of such an artifact is a challenge, as entities are different even within a closely defined sector such as Danish district heating, and when the artifact is applied to serve different purposes, other challenges are introduced. Consequently, the use of a standardized chart of account for both regulation and governing, and for knowledge sharing and learning, is likely to yield unanticipated and undesirable results for society in general.

Furthermore, the use of this standardized chart of account is indeed a challenge for the participating organizations. Even if the organizations agree to use such a standardized chart of account, the understanding and implementation of it must be negotiated and agreed among the involved parties in all the participating organizations. Additionally, such a standardized chart of account will conflict with existing accounting systems in many organizations. This is especially true for those organizations that are a subsidiary of larger organizations using a business-wide accounting system.

A more practical aspect is how to allow benchmark regulation within a sector to be successful. The 'benchmarker' and the 'benchmarked' should agree upon a set of accounting rules to enable fair and just regulation. Moreover, these must be communicated throughout the sector and incorporated in all the organizations to be benchmarked. If the benchmarking result is used by authorities for regulatory purposes, ranking can obviously not be veiled, and as confidentiality is inadequate, this will consequently jeopardize sector improvement as knowledge sharing, and learning within the sector will most probably not take place as intended.

The study of the six-city project has demonstrated how the interpretation and understanding of accounting rules and standards differ among the companies and how order and interpretations are negotiated in a social process. If similarities and differences are not dealt with in this process it seems unlikely that a standardized chart of accounts will actually contribute to standardizing data and ensuring a sufficient data quality for benchmarking purposes. Additionally, it became more and more evident during the six-city group's benchmarking process, that accounting principles in relation to assets, including depreciations, represents a specific

challenge. No easy solution to this problem is obvious because most district heating companies do not have a (traditional) balance sheet where assets are recognized.

Bringing six somewhat similar companies together and agreeing on a common understanding of accounting based indicators was possible. But introducing a standardized chart of accounts based on a mutual agreement among 400 heterogeneous companies within the Danish district heating sector will probably be extremely complicated if not impossible. Among the key factors that seems to have contributed to the agreement realized among the six-city group is probably that it was a small group of companies comprised by large companies with the technical expertise to solve the challenges in relation to the accounting principles. Further, it is important that it was agreed to keep the ranking confidential. This was a lessen learned ten years earlier when the same companies attempted to develop a benchmark model but failed because ranking was not held confidential.

From the perspective of the Danish District Heating Association and the Danish Regulatory Authorities the main challenge in adopting a benchmarking model whether for regulation or other purposes is the development of a standardized chart of accounts. This was also the point of departure when the six-city companies were initially approached and interviewed. However, the results from the study indicate paradoxically, that it may be the mere existence of benchmark-based data that are hindering the development of the standardized chart of accounts.

Whether the benchmarking is based on accounting numbers, or other data, the problems are likely to be the same, – and the technical challenges in defining chart of accounting may be inferior compared with the behavioral challenges.

DANSK RESUME

Siden indførelsen af New Public Management (Hood, 1991, 1995) er benchmarking opstået som et redskab til at regulere organisationer, som ikke bliver udsat for de traditionelle markedsmekanismer (fx Pollitt, 1995). På den anden side har konkurrence også tilskyndet organisationer til at sammenligne deres resultater gennem benchmarking med deres konkurrenter eller med 'best practice' inden for en sektor (Otley, 1994, s. 295). Disse to eksempler illustrerer anvendelse af benchmarking som henholdsvis "obligatorisk" og "frivillig" (Bowerman *et al.*, 2002). Men hvad sker der når man kombinerer de to, og kræver benchmark-regulerede organisationer at man skal lære af hinandens praksis? Umiddelbart kunne man anse denne måde at bruge ét værktøj til at løse mange opgaver for at være en god idé, men det er ikke uden udfordringer og spørgsmålet danner udgangspunktet for denne afhandling.

Dette ErhvervsPhD projekt har Dansk Fjernvarme som værtsvirksomhed og har den danske fjernvarmesektor som sit empiriske domæne. Selve afhandlingen anvender en fortolkende tilgang til at beskrive og forklare hvorfor og hvordan sektoren er kommet frem til sin nuværende status, samt hvorfor og hvordan en gruppe af organisationer inden for sektoren reagerer på en bestemt re-regulativ foranstaltning i form af 'network benchmarking'. Dette er en interessant situation da den nævnte foranstaltning endnu ikke er ført ud i livet, og det derved giver mig mulighed for at studere situationen 'in the making' (Latour, 1987).

En fællesnævner for denne afhandling er benchmarking, da det institutionelle pres fra myndighederne om en fremtidig benchmark regulering af sektoren menes at påvirke den empiriske setting. Benchmarking, som begreb, er veldokumenteret og til at kridte banen op udføres der i kapitel to et litteraturstudie omkring "benchmarking".

En analyse af sektorens historie gennem en dekonstruktion af Dansk Fjernvarmes 50 års jubilæumsbog udgør den første del, og resultatet præsenteres i afhandlingens første artikel. Her mobiliserer jeg McAdam og Scotts begrebsramme (2005), som kombinerer 'movement theory' og 'organizational theory'. Fokus er især på hvordan 'movement'-lignende adfærd ved omkostningsbevidste borgere udvikler sig til formelle enheder, og hvordan disse bliver udfordret og destabiliseret af opståede processer. Forskningsagendaen er af særlig interesse da sektoren, som længe har været kendt for individualisme og iværksætterånd, er blevet stærkt institutionaliseret og struktureret. Denne første artikel bidrager til det voksende forskningsområde, der forbinder de to felter 'organizational theory' og 'social movements'.

Anvendelsen af McAdam og Scotts begrebsramme (2005) i denne undersøgelse afspejler forfatternes eget forsøg på at demonstrere deres begrebsramme (McAdam & Scott 2005, s. 19-38). Begrebsrammen viser sig værdifuld ved at bibringe tekstur til en almindelig tekst og tilvejebringe nye perspektiver – ikke blot for en sektors historie, men også for forståelsen af en infrastrukturs udvikling. Det anvendte rammeværk viser sin evne til at omfatte strukturer og processer, såvel som etablerede og opståede organisationer, grænseoverskridende kontroverser samt institutionaliseret autoritet, og hjælper med at forklare sammenhængen mellem lokale eller specialiserede områder og bredere samfundsmæssige systemer.

Min anvendelse af deres rammeværk er ifølge forfatterenes viden den første nogensinde. "The framework has not been used as the guiding framework for systematic studies of the emergence of and development of movement or other forms of organization" (jf. privat korrespondance fra 7. april 2014), på trods af at rammeværket er bredt citeret.

Undersøgelsen har også vist, hvordan McAdam og Scotts rammeværk (2005) kan anvendes som hjælp til at 'assess and systemize claims from qualitative and historical works about movement effects and the relationships between movements, institutional contexts and outcomes' som anmodet af Schneiberg og Lounsbury (2008, s. 650). Derudover har undersøgelsen vist, hvordan det samme rammeværk kan bidrage til at 'analyze movements as a political condition for diffusion and other institutional processes' – også anmodet om af Schneiberg og Lounsbury (2008, s. 650).

I det undersøgte organisatoriske område kunne bevægelsen handle frit i det offentlige rum på vegne af sine "medlemmer" og uden afbrydelse fra myndighederne. Dette var tilfældet indtil myndighederne oplevede bevægelsens fysiske aktiver som en måde at øge skatter og afgifter, og samtidig handle i det større samfunds interesse med hensyn til CO_2-udledningen, infrastruktur og sikrere energiforsyning. Indtil da brugte bevægelsen selvregulerende mekanismer, samt markedsmekanismer på vegne af sine medlemmer. Denne undersøgelse har også vist at den danske fjernvarmebevægelse var et sjældent og tidligt eksempel på en rationel, social bevægelse i modsætning til de mere almindeligt kendte eksempler på bevægelsers klassekamp og kulturel forandring.

I de følgende to artikler studerer jeg en bestemt gruppe af danske fjernvarmevirksomheder, der er kendt inden for sektoren som "6-byerne". De har iværksat et frivilligt benchmarking modelprojekt, som jeg studerer ved at observere deres møder og gennem personlige interviews. Den første af disse to artikler undersøger, hvorfor de er gået i gang med dette projekt. Her anvender jeg Olivers rammeværk (1991) for at studere deres strategiske reaktioner, mens de afventer myndighedernes bebudede re-regulering.

Når der er forventning om at blive udsat for en fremtidig benchmarking regulering, kunne en naturlig reaktion være at forberede sig ved brug af tilgængelige ressourcer. Og samtidig ville det også være oplagt at analysere mulige konsekvenser og se, om der er plads til at manøvrere og at påvirke den kommende indførelse af det. Casestudiet viser hvordan et bestemt netværk af organisationer med ensartet institutionel logik var i stand til at forhandle og blive enige om strategier for at nå frem til en særlig form for benchmarking praksis, nemlig 'network benchmarking' (Kyrö, 2003, 2006) som en særlig måde at frivilligt 'benchmarke' sig på (Bowerman *et al.*, 2002).

Derudover kan denne holdning ikke bare demonstrere en positiv respons, men også en proaktiv tilgang. Når organisationer allerede har et etableret og igangværende netværk, er det endnu lettere at fortsætte med network benchmarking og drage fordel af den allerede eksisterende, direkte interaktion baseret på tillid og kommunikation. Et allerede eksisterende netværk blandt virksomheder kan derfor både motivere og muliggøre at virksomheder indgår i et sådant network benchmarking samarbejde.

Ressourcer spiller en vigtig rolle for Oliver (1991) i 'resource dependency' – ikke kun for at få hænderne i knappe ressourcer, men også som 'scope conditions', eftersom utilstrækkelige organisatoriske ressourcer begrænser evnen til at efterleve de institutionelle krav (Oliver, 1991, s. 159). Empiriske beviser fra denne undersøgelse understøtter, at 'scope conditions' er af stor betydning, når ressourcerne er knappe, og behovet for ressourcer er højt i den enkelte organisation. Ikke kun for at finde måder at håndtere krav på, men også til finansiering af samarbejde med andre i jagten på at finde en måde at overholde kravene. Dette er tilfældet for de fleste af de spredte og mange medlemmer af Dansk Fjernvarmeforening.

Artiklen illustrerer 'processes at work in the transitional period during which successful movement objectives are "handed off" to legislatures and the public agencies for follow-through and implementation', som ifølge Scott (2008, s. 195) er et forsømt forskningsområde, og fremmer et indblik i 'the role of organizational self-interest and active agency' (Oliver, 1991, s. 145). Mens organisationer afventer re-regulering så handler de, men selv om der findes flere divergerende, institutionelle logikker blandt de deltagende organisationer, så er de i stand til at forhandle og blive enige om et samlet rammeværk for deres frivillige benchmarking og om at implementere dette i deres individuelle Management Control Systems.

Dette viser at de, på trods af fraværet af en lov-tvungen benchmarking, er villige til at skifte fra en selvcentreret institutionel logik til en mere kooperativt centreret institutionel logik, da de anslår at en sådan ændring vil have en samlet fordel for dem. Organisationerne vurderer derved nettofordelene til at overstige de negative aspekter såsom forbrug af tid og ressourcer i løbet af netværkssamarbejdet, samt

blotlægning af organisationens relative præstationer overfor både egen organisation og de andre organisationer i netværket.

Network benchmarking kan også ses som en form for frivillig fremvisning af præstationer, hvor de deltagende organisationer kan opnå finansiel- eller kvalitetsforbedring og organisatorisk læring fra selvrapporterede problemer ved at sammenligne egne resultater med andres. Det hævdes at dette kun er muligt, hvis relativ placering i netværket er fortroligt og hemmeligt for offentligheden. En direkte konsekvens af dette er myndighedernes "schweizerkniv"-tænkning, hvor de i stedet burde overveje at bruge benchmarking regulering *enten* til 'videndeling og læring' *eller* 'regulering og styring', eftersom begge dele på samme tid virker modstridende.

I den sidste af afhandlingens artikler anvender jeg Kasperskayas rammeværk (2008) til at analysere hvordan medlemmerne af 6-byerne gennemfører selve benchmarking modelprojektet. Ved at sammenholde resultaterne konkluderer jeg, at organisationer, der er udsat for de samme institutionelle stimuli, kan anvende samme taktik i institutionaliseringen af nye initiativer, men det er værd at huske at de seks undersøgte enheder eller case-organisationer indgår i en eksisterende koalition og formentlig har en gensidig interesse. Dette kunne synes at være i modstrid med resultaterne i undersøgelsen fra Kasperskaya (2008), men på den anden side blev denne udført som et multi-casestudie med to cases, hvor organisationerne hverken havde samarbejde eller gensidig interesse. 6-byernes benchmarking modelprojekt har vist, hvordan brugen af en standardiseret kontoplan kan blive brugt af forskellige virksomheder inden for en sektor som en parallel til deres almindelige regnskab.

De empiriske beviser peger også på mange mulige forklaringer på, hvorfor 6-byerne ikke blot indledte benchmarking modelprojektet, men også hvorfor det blev gennemført med succes. Selvom det ikke er oplagt hvem der er den mest eller mindst vigtige, så er en af forklaringerne at man kan være på forkant med re-regulering ved selv at anvende benchmarking. En anden forklaring er, at man kan være forberedt, når den bebudede re-regulering er ved at ske, men også at være i stand til at påvirke "the forging of tomorrow's rules" (Scott, 1993). Brugen af benchmarking resultater overfor foresatte og andre aktører kan endvidere være vigtigt af legitime årsager. Indenfor deres egen organisation kan brugen af benchmarking også være et nyt redskab i værktøjskassen for at kunne sætte en ny dagsorden.

Fokus i Braadbaart & Yusnandarshah (2008) er på benchmarking i den offentlige sektor, og problemerne med datakvalitet, sammenlignelighed og besværet med at designe meningsfulde 'performance indicators' synes at være relateret til interne regnskabssystemer. Dette menes ligeledes at være relevante også for organisationer, der deltager i fælles projekter med frivillig benchmarking som 6-byernes

benchmarking modelprojekt. Hvordan oplysningerne fortolkes og operationaliseres i 6-byernes benchmarking modelprojekt kunne tyde på skalafordeler i forhold til de disponible ressourcer. I tillæg viser 6-by projektet hvordan en ny benchmarking model forhandles i netværket for at nå til en fælles forståelse og brug.

Danske fjernvarmeselskaber udgør en meget heterogen gruppe af selskaber. For at kompensere for denne forskellighed har sektoren efter aftale med myndighederne udarbejdet en standardkontoplan. Indførelse af et nyt artefakt som en standardkontoplan til en sektor kunne ligne en nem og ligetil opgave for organisationerne at gennemføre. Men, eftersom virksomheder er forskellige, er inkorporeringen af et sådant artefakt en udfordring selv inden for en nøje defineret sektor som Dansk Fjernvarme på grund af faktorer som type, størrelse, placering og ejerskab, og når artefaktet anvendes til at tjene forskellige formål introduceres andre udfordringer. Derfor er brugen af en standardkontoplan til både regulering og styring og til videndeling og læring, tilbøjelig til at give uventede og uønskede resultater for samfundet som helhed.

Desuden er brugen af denne standardkontoplan en udfordring for de deltagende organisationer. Selvom organisationerne er enige om at anvende en sådan standardkontoplan, skal forståelse og implementering af denne forhandles og aftales mellem de involverede parter i alle de deltagende organisationer. Derudover vil en sådan standardkontoplan være i strid med de eksisterende regnskabssystemer i mange organisationer. Dette gælder især for de organisationer, der er datterselskaber i større organisationer som benytter fælles overordnet regnskabssystem.

Et mere praktisk aspekt er, hvordan man kan opnå en vellykket benchmark regulering indenfor en sektor. Den som "benchmarker" og den som "benchmarkes" bør blive enige om et sæt regnskabsregler for at muliggøre fair og retfærdig regulering. Desuden skal disse meddeles i hele sektoren og indarbejdes i alle de organisationer, der skal benchmarkes. Hvis resultatet af benchmarkingen bliver brugt af myndighederne i reguleringsøjemed, kan ranking naturligvis ikke holdes hemmelig, og den nødvendige fortrolighed bliver derfor ikke opnået. Dette vil derfor true sektorens mulighed for forbedring gennem vidensdeling og læring på tværs af sektoren, da dette sandsynligvis ikke vil finde sted efter hensigten.

Undersøgelsen af 6-by-projektet har vist, hvordan fortolkning og forståelse af regnskabsregler og standarder er forskellige blandt selskaberne, og hvordan mening og fortolkning forhandles i en social proces. Hvis ligheder og forskelle ikke er behandlet i en sådan proces, synes det usandsynligt, at en standardiseret kontoplan faktisk vil bidrage til at standardisere data og sikre en tilstrækkelig kvalitet af data for benchmarkingens formål. Derudover blev det mere og mere tydeligt i løbet af 6-byernes benchmarking proces, at regnskabsprincipper i forhold til aktiver, herunder afskrivninger, udgør en særlig udfordring. Ingen nem løsning på dette problem er

indlysende, fordi de fleste fjernvarmeselskaber ikke har en (traditionel) balance ifølge den gældende lovgivning, hvor aktiver indregnes.

At bringe seks nogenlunde tilsvarende virksomheder sammen og blive enige om en fælles forståelse af regnskabsbaserede indikatorer viste sig dog at være muligt. Men at indføre en standard kontoplan baseret på en gensidig aftale mellem 400 heterogene virksomheder inden for den danske fjernvarmesektor vil sandsynligvis være ekstremt kompliceret, hvis ikke umuligt. Blandt de vigtigste faktorer, der synes at have bidraget til at 6-byerne lykkedes, er nok, at det var en lille gruppe af selskaber bestående af store virksomheder med den nødvendige tekniske ekspertise til at løse udfordringerne i forhold til regnskabsprincipperne og fortolkningerne af disse. Endvidere er det vigtigt, at det blev aftalt at holde ranking fortrolig. Dette var en lektie de erfarede ti år tidligere, da de samme virksomheder forsøgte at udvikle en benchmark model, men som mislykkedes, fordi ranking ikke blev holdt fortrolig.

Set fra Dansk Fjernvarme og de Danske regulerende myndigheders side består den største udfordring i forbindelse med en benchmarking model, i udviklingen af en standard kontoplan, uanset om formålet er regulering eller læring. Det var også udgangspunktet, da 6-byerne oprindeligt blev kontaktet og interviewet. Men resultaterne fra undersøgelsen tyder paradoksalt på, at det kan være den blotte eksistens af benchmark-baserede data, der hindrer udviklingen af en standard kontoplan.

Hvorvidt benchmarking er baseret på regnskabsmæssige tal eller andre data, vil problemerne sandsynligvis være de samme, - og de tekniske udfordringer i at definere en standard kontoplan, vil være underordnet sammenlignet med de adfærdsmæssige udfordringer.

PREFACE

The empirical outset for this project is the organizational field of the Danish district-heating sector. I was employed by the Danish District Heating Association, as an Industrial PhD student, from June 2008 to November 2012. The idea for this research was born from the association's interest in benchmarking, which aligned very well with my own interests in management accounting.

Being an Industrial PhD project, the purpose of the research is twofold, as it shall contribute both to science as well as to a practical problem. The science part is achieved by an interpretive approach to describe and explain why and how the sector has arrived at its present status, as well as why and how a group of organizations within the sector is responding to institutional pressure from regulators for benchmark regulation of the sector.

Regarding the practical part, a new artifact has been developed in the form of a management accounting model, based on activity-based costing (ABC). To test the model and its usefulness, 50 management accounting students (cand.merc) at Aalborg University have been introduced to district heating companies of various sizes with whom they have had close interaction through the execution of their student projects by testing the model in 14 organizations. The resulting general model is ready to be made available to the members of the association for their discrete use or even lay the foundation for internal benchmarking within the sector as an alternative to the existing paradigms in current use.

Although my main focus has been to produce the three articles found in my PhD thesis, I have also been involved in other aspects of management accounting relevant to both the sector and the thesis. This has materialized through articles published in the monthly magazine "FJERNVARMEN" by the Danish District Heating Association, but also through other publishers. Collectively, I have contributed to 14 articles, but it shall be mentioned that neither of these articles nor the ABC-model forms a part of my PhD thesis.

According to my peers, Martin Dahl (Centralkommunernes Transmissionsselskab I/S) asked, 'What can we do to establish some research on this field?' which initialized this Industrial PhD project. This remark initiated the project and the Chairman of the Board Uffe Bro, together with CEO Jørgen G. Jørgensen, Department Manager Lone Hansen and International Manager Birger Lauersen, all from the Danish District Heating Association, ultimately gave backing and support for the idea and opened up access to the sector and sources for empirical data as well as provided me valuable help and support along the way.

This thesis would not have been possible without the help and support from several persons. From an academic point of view, my supervisor at Aalborg University, Prof. Ph.D. Per Nikolaj Bukh has always given me the best possible support and helped me keep my spirit high when days felt long and the finishing of this thesis seemed distant.

Special thanks also go to the Danish District Heating Association's 'Knowledge-sharing group for benchmarking' (ERFA), which was the practical environment where I took my first lessons and inspiration for the project, and last but not least to the managers of the 'six-city' group of companies that became my main source of empirical data: Niels-Aage Gregersen at Aalborg Forsyning (Varme), Lars Houmann og Elsebeth Arendt at AffaldVarme Aarhus, Sigfred Lundvig and Claus A. Nielsen at Esbjerg Forsyning, Jan Strømvig at Fjernvarme Fyn, Astrid Birnbaum at Hofor Fjernvarme and Karsten Randrup at Verdo Varme. They kindly provided access to their meetings and were readily available for interviews.

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July 2015

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CHAPTER 1: THE THESIS

1. INTRODUCTION

Benchmarking may be used on many occasions, but any organization using it to compare its performance to its peers uses some kind of accounting information, particularly management accounting information (Siverbo, 2014). Benchmarking is for many an everyday tool and might look straightforward, but the devil is in the detail: The use of benchmarking as a management technology requires due diligence and consistency not only with regard to the applied methods and techniques, but also to the expected use of the results.

I became aware of this during the work on an earlier article on benchmarking ("Benchmarking in the public sector: From methods and techniques to regulation and governing")[1] discussing the many challenges of 'benchmarking' because of its widespread use and diverse applications. Evidently, benchmarking is a major priority of both regulators and the regulated throughout the Western hemisphere where regulation and control by authorities is an issue (e.g. Jamasb *et al.*, 2003, 2004). Regulation is generally seen an established part of modern society, where benchmarking forms a natural extension.

Since the introduction of NPM, or New Public Management (Hood, 1991, 1995), benchmarking has emerged as a tool to regulate organizations not being exposed to traditional market mechanisms (e.g. Pollitt, 1995). On the other hand, competition has also encouraged organizations to reference their performance through benchmarking to that of their competitors, or with best practices within a sector (Otley, 1994, p. 295). These two applications exemplify benchmarking in terms of "compulsory" and "voluntary" adoption, respectively (Bowerman *et al.,* 2002).

Research on both ordinary private companies and utilities shows that competition-motivated models for regulation and control will affect the cooperation between the regulated companies and that there may be dysfunctional behavior (e.g. Jamasb *et al*., 2003, 2004), and literature warns that introduction of NPM may lead to paralysis, decoupling or ceremonial observance of rules and requirements (e.g. Hernes, 2005; Lines, 2005).

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[1] *Authored together with Prof. Per Nikolaj Bukh and Ass. Prof. Niels Sandalgaard (both at Aalborg University, Denmark) and published July 2008.*

[2] *See e.g.* http://community.cochrane.org/cochrane-reviews *or* http://www.sfi-

Benchmarking has been introduced in the Danish public sector as an all-round solution or "Swiss army knife" to be used on problems ranging from knowledge sharing and learning to regulation and governing (e.g. Danish Ministry of Finance, 2000). Even though the interest in benchmarking has mainly been offset in the absence of traditional market mechanisms for public enterprises or services, it is also applied to enhance users' understanding of service quality and price in many areas in the public sector. Utilities (water, sewage, gas, district heating and electricity) are, despite their diverse ownership structures, also an integral part of the public sector and are, therefore, subject to detailed regulations formulated by the government.

In the Danish electricity sector, the authorities introduced a benchmark-based regulatory model that aims to make specific efficiency improvement requirements for the relatively less efficient power plants. Such models are well described in the international literature, where both statistical analysis and boundary methods based on Data Envelopment Analysis have been used (e.g. Agrell *et al*., 2005; Giannakis *et al*., 2005; Munksgaard *et al*., 2005).

The Danish district-heating sector is changing, particularly due to the need for re-regulation of the sector as deemed necessary by the regulators in a New Public Management environment (Government, 2006, p. 96; Danish Energy Agency, 2007, p. 20). The re-regulation shall be facilitated through benchmarking accounting numbers, and some of the challenges, therefore, are identification of not only which accounting numbers to use, but also how they shall be validated across a multitude of accounting systems residing in the numerous district-heating companies making up so heterogeneous a sector. Benchmarking is in other words the critical point of this thesis, along with the dilemmas it raises concerning 'learning' and 'regulation'.

At the outset I found the described situation interesting to investigate, and also because the district heating companies organizationally are historic examples of a social development, where processes and actions of individuals are initialized from external threats and opportunities. As I will argue later on the sector is now generally seen institutionalized and regulated, and it is of great importance not only for the sector itself, but also from the societal point of view to have a fair as well as just model for regulating the companies in order to maximize the effectiveness of the single company without jeopardizing the overall economic impact from the combined sector as well as environmental aspects. Additionally, the situation is interesting to investigate as a response to Otley (1994) to develop more theorizations on accounting in inter-organizational settings.

2. THE DANISH DISTRICT-HEATING SECTOR

The Danish district-heating sector has a long history, with the first district heating companies established more than hundred years ago. It started as entrepreneurial initiatives by individuals as well as by municipalities and has grown to cover the space-heat demand for more than 60% of all households in Denmark.

District heating is a particular way of solving the demand for business and domestic space heating. It rests on the assumption that there is an economy-of-scale in heat-production as long as there is means for distributing the heat in an efficient way as for example hot water-borne, as is normally the case for district heating. Heat-production itself might come from a variety of sources, for example burning of fossil fuels or straw, or hot water coming from heat pumps or solar panels. A popular combination is combined heat and power (CHP) using a gas-fired engine to produce electricity and the subsequent use of the heated cooling water for district heating.

In Denmark, there are approximately 400 district-heating companies, where the majority is small and scattered all over Denmark in villages and small cities, as a.m.b.a.'s, a Danish variant of mutual companies, having a pertinent history in Danish rural districts to overcome the financial hurdle regarding economy-of-scale in agriculture by drawing on the co-operative movement. According to van der Vleuten and Raven (2006), 'this movement had been very strong in Denmark since the last decades of the nineteenth century, where co-operative dairies revived Danish agriculture, and the co-operative principle has since been extended into service organizations (wholesale trade, banking) and production (other types of factories). From the turn of the twentieth century, rural inhabitants massively founded jointly owned power systems to improve the competitive position of rural Denmark' (van der Vleuten & Raven, 2006, pp. 3741-3742).

In other words, the district heating movement was just a continuation of prevailing practice in rural Denmark, and the many small co-operatively owned district heating organizations are still the cornerstones of Danish district heating. But there are also much larger district heating entities serving cities like Copenhagen, Aarhus, Odense, Aalborg and Esbjerg, but these are either run as corporations owned by municipalities or self-owning institutions.

The Danish district-heating sector is regulated and managed today by a complex interaction between laws, rules, etc., which are generally applicable to business entities and for municipal corporations, specifically for different types of utilities and competition law. As the district-heating sector is not homogeneous, many different conditions determine which rules the individual companies are subject to.

There are district-heating entities that produce heat, transmit heat and distribute heat and, either only one of these tasks, or combinations of these three.

District heating firms are technically natural monopolies (e.g. Jacobsen *et al*., 2006: Joskow, 2005; Klausen, 2003), and a key aim of regulators is to create a market-like competition between them. Today, the existing requirements for the Danish district-heating sector are enforced by agencies like the Danish Energy Agency, Danish Energy Regulatory Authority, Danish Competition and Consumer Authority as well as municipal heating plans, and additionally, the sector must meet many financial obligations for both public and private companies. Most importantly, the Danish district-heating sector must comply with the so-called 'non-profit' or 'cost-of-service' principle, which means that companies must not make profits, and consumer prices shall reflect the true cost of production.

As the existing 'cost-of-service' regulation is believed not to motivate organizations to improve (e.g. Schleifer, 1985), authorities impose institutional pressure for benchmark regulation of the sector as exhibited by, for example, the Danish electricity sector. The models often lead to individual efficiency requirements and establishing a cost framework within which companies must operate. The benchmarking, thus, has quite far-reaching consequences because it determines the cost frame and, in turn, influences the company's revenue cap. Several countries have experience in developing such more or less sophisticated benchmarking-based regulatory models in the utility sector, but to our knowledge, benchmark regulation of district heating is undeveloped (Wissner, 2014).

The majority of Danish district-heating companies are members of the Danish District Heating Association. The same association has established a standard chart of accounts to be used for the voluntary benchmarking, but despite its voluntary use, it is used by a growing number of district-heating companies. This accounting nomenclature is organized by function-based principles and is meant to facilitate the calculation of many key figures, and it is meant to form the basis for centrally managed regulatory benchmarking. As a preliminary result, many key figures and entrepreneurial experience based on these have been established.

3. SCOPE, THEMES, AND STRUCTURE OF THE THESIS

In order to get additional knowledge on benchmarking the Danish district heating association initiated an Industrial PhD project, where I got engaged as the PhD-student. Soon after commencing on this project, I realized my 'pre-understanding' of the situation was subject to revision. In many of the small and medium-sized

Danish district heating companies, the combined management/personnel seemed to be technicians led by a board of directors containing local people elected from the owner/customers in the district-heating co-operative. The same board members often take care of the accounting, incorporating reporting functions into their authority and setting the price for the service as the Danish district-heating sector is regulated as "cost-of-service", as if accounting is decoupled from the daily running of the "business". Moreover, the majority of these small district-heating companies were operated and maintained by people on a voluntary basis, with little or no economic compensation.

From my educational and practical background, I had come to regard accounting and accounting information as fundamental and indispensible inputs to running an organization not only for owners and leaders, but also for employees. After having spoken to many different persons within the district-heating sector, I realized I was studying something different in many respects. This became even more explicit when I became introduced to how and why benchmarking was introduced to the sector, and the spectrum of reactions from within the sector. This appeared to me as a mysterious setting, and my reaction was, *What is going on here?*

3.1 The research scope

A starting point in this endeavor is to get to know the empirical setting, its history and development. The study shall incorporate the early forming of what is eventually becoming the Danish district heating sector, as well as when the organizational field is formed. A *field* refers to 'those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services and products' (DiMaggio & Powell, 1983, p. 148). The recent interest in research in the common enterprise of understanding the origins and consequences of collective action can help addressing this issue.

One proposition is that resource mobilization theory has dramatically changed social movement research by treating movements as organizational fields and applying organizational analysis to movement dynamics (cf. Weber & King, 2015 for an historical overview) so that phenomena like social movements shaping the compositions of fields and fuel path creation by promoting new kinds of forms can be studied (Carroll & Swaminathan, 2000; Rao *et al.*, 2003; Lounsbury *et al.*, 2003).

Another proposition is that 'movements might figure in the production of unintended and incremental *trajectories* of change' and 'even when they are defeated or their time has passed, movement may leave legacies, elements of institutional orders and bits and pieces of paths not taken, producing important

effects, and creating possibilities for subsequent movements, institution-building and transformation' (Schneiberg & Lounsbury, 2008, p. 651).

Central in this endeavor is benchmarking, as the institutional pressure from regulators for benchmark regulation of the sector is believed to influence the empirical setting. The concept of benchmarking is well researched and there are various identifiable trends in the epistemology of benchmarking (Moriarty & Smallman, 2009), such as for example case studies, models, general issues and fundamentals. Benchmarking is also researched in many contexts such as, for example, local government (e.g. Knutsson *et al.*, 2012; Ammons & Rivenbark, 2008; Bowerman *et al.*, 2001) and various parts of the utility sector (e.g. Jamasb & Pollitt, 2007; Dassler *et al.*, 2006; Vinnari, 2006; Marques, 2006; Lin, 2005; Jamasb *et al*., 2004).

The available literature reviews containing both 'district heating' and 'benchmarking' discusses either specific benchmarking methods (e.g. DEA or COLS), or 'benchmarking' is used to describe technical issues like type of building, insulation or materials. Existing literature (e.g. Fortum, 2011; Fortum 2012; Wissner, 2014) also indicate benchmark regulation of district heating is rare, and obviously empirical research is difficult. Therefore, the six-city benchmarking project represents an interesting setting, as they perform a voluntary horizontal and collaborative benchmarking exercise within an existing network in the utility part of the public sector.

3.2 The research question

Although the articles should not be viewed as the outcome of a deliberate research program, together they address the following overall research question:

In light of its history and development, how does institutional pressure from regulators for benchmark regulation impact the Danish district-heating sector with regard to strategic maneuvering?

3.3 The structure of the thesis

This thesis is divided into five chapters. Chapter one contains the introductory part of the thesis where section one has described the background for the thesis, while section two has introduced the source of empirical data. This section three introduces the scope, themes, structure and research questions. The next section four will present the methodological considerations as well as the applied theoretical frameworks. Section five will present contributions from the thesis, and finally section six will present some practical implications and suggestions for further research.

With benchmarking as a central concept in this thesis, we set out in chapter two to describe benchmarking by reviewing the benchmarking literature in general and benchmarking within the public sector and in networks in particular. This is in order to establish a foundation and to set the scene for what will come later in the thesis, particularly in chapters four and five.

To answer the overall research question, we have studied both the sector's history and development, and the 'six-city group', which is a network of Danish district heating companies that have embarked on a voluntary benchmark project. The results are presented in the thesis' three articles.

Basically, the three articles take two points of departure, where the first presents the history and background of the Danish district-heating sector. This article, *The emergence, institutionalization and structuring of an organizational field: An analysis of a sector's history* (Chapter 3) is an analysis of the sector's 50th anniversary book, and presents the early forming of what is eventually becoming the sector, as well as when the organizational field is formed.

The next two articles, *The forging of tomorrow's rules: Strategic maneuverings in the wait for re-regulation* (Chapter 4) and *The formation of a benchmarking model in six Danish district heating companies - An institutional perspective* (Chapter 5), are primarily empirical in nature. The former article concern strategic responses to regulatory pressures and proposes why a group of six Danish district heating companies have embarked on a particular collaborative mission known as the 'six-city benchmark model project'.

The latter article concerns the actual formation of the benchmark model that took place in the same six-city network. The focus is particularly on how the emerging accounting information is interpreted and operationalized by key decision makers in the participating organizations, and how they are relating the benchmark model project to the existing regulation of the sector.

4. RESEARCH APPROACH

Finding myself within a research situation that could be labeled somewhere between 'relatively unknown context with low analyzability' and 'well-known context with low analyzability' (Pettersen & Mellemvik, 2005, pp. 53-58), I chose to proceed on the project in a qualitative way using mingling, observations and interviews as the empirical tools as well as studying archival data. Evidently the

present is interesting, but also the preceding history and origins in order to enable a better understanding of the present.

Having the Danish district-heating sector given as the empirical source I chose to apply not only institutional theory, but also social movement theory. The justification for introducing social movement theory in addition to institutional theory is that where institutional theory may be applied to describe periods of conflict and change, social movement theory can contribute to explain the origins of such periods (McAdam & Scott, 2005). In other words, social movement theory enables a more dynamic and process oriented approach to understand the pre-institutional period where individuals formulated and initiated what later became known as the Danish district-heating sector.

When I am studying the six Danish district-heating companies it is essential to remember they are not subsidiaries of the association but individual member organizations. This implies I am not coming as a neutral person to the six companies introducing challenges as for example to get access. Having the association to introduce me, and the signing of a non-disclosure agreement to assure confidentiality solved this. I was therefore granted access to observation of the benchmark model project meetings in the "six-city group' as well as to individually interview the members of the same group.

The overall methodology is 'qualitative' according to Ahrens and Chapman (2006), as the method involved collecting empirical material in multiple ways through informal mingling, observations of meetings, individual interviews, and analysis of archival data. Even though I was employed at my host company (The Danish District Heating Association) as an Industrial PhD student for three years, I did not take part in everyday work. However, I did take part in conversations, workshops, meetings, and the so-called ERFA-group (a group for knowledge-sharing) for benchmarking, mostly at the premises of the association.

With the 'six-city benchmark group' populated by individuals representing the six participating organizations, multi-level aspects were brought into play and, according to Yin (2003, p. 40), the study could be seen to fall into the single-case study (the group of people attending the six-city benchmark model project meetings). But at the same time key representatives from the same six district heating companies are embedded in the project as logical subunits forming multiple units of analysis and overall this results in what Yin call an 'embedded, single-case design' (2003, p. 43).

According to Yin (2003), the ability to look at subunits situated within a larger case may prove powerful, as data can be analyzed within the subunits separately (within case analysis), between the different subunits (between case analysis), or across all of the subunits (cross-case analysis) overall, 'allowing the researcher to understand

one unique/extreme/critical case' (Baxter & Jack, 2008, p. 550). As will be demonstrated later, the embedded level of key personnel will be analyzed from individual interviews.

4.1 An introduction to the research approach in the three articles

The research contained in the first article is based on an analysis of the book *Dansk Fjernvarme i 50 år: 1957-2007* (the 50th anniversary book of Danish District Heating Association), published in commemoration of the association's 50th anniversary. Here we mobilize the conceptual system and the underlying theory as described in the work of McAdam and Scott (2005) were focus is the composition of the field in terms of actors and how they exist in the wider social environment seen through the lens of institutional theory and social movement theory. The first article could be called 'a non-interventionist theory illustration case research' (Lukka, 2005, p. 384), as it illustrates the use of McAdam and Scott's (2005) framework.

For the two last articles, the case study method is chosen because it is well suited to obtaining an in-depth understanding of how organizations 'experiment' with new accounting systems (Chua, 1995). The case in this thesis consists of a benchmarking network of six Danish district heating companies (subunits). Although large the six companies are all somewhat dissimilar Danish district-heating companies, such as, for example, with regard to type of fuel, customer base and localization. Scapens (2004) states that somewhat 'dissimilar' organizations in a similar institutional field may provide a deep and rich research perspective and thereby contribute to the debate on drivers for management accounting change in organizations.

The main empirical data for these two last articles are based on semi-structured individual interviews with introductory and follow-up questions (e.g. Kvale, 1996, pp. 124-143), as well as observations of the group containing the interviewed persons when they held meetings. Both the individual interviews and the observations allowed checking of validity such as, for example, representativeness, weighing the evidence, following up on surprises, replicating a finding, and getting feedback from multiple informants (Kvale, 1996, p. 242). The interviews were transcribed and returned to each participant together with the corresponding articles for comment and editing. Offering the interviewees the opportunity to comment on the transcripts as well as the use of interview data in articles is an important way of validating data and gaining new insights (Kvale, 1996).

When performing an interview, this personal interaction affects not only the interviewer but also the interviewee, and the knowledge produced in the interview affects our understanding (e.g. Kvale, 1996, p. 109), and hopefully both become wiser (Kreiner & Mouritsen, 2005, p. 173). An interview, like any other personal

conversation, will therefore always be some sort of intervention. We regard the impact of the intervention with the Danish district-heating sector to be of relatively minor significance compared to other activities and players within the field.

4.2 An introduction to the applied theoretical framework

Throughout the thesis, different frameworks originating from either institutional theory or social movement theory are used. These frameworks are used as lenses through which the empirical data are analyzed. Even though this thesis uses these different analytical frameworks, it is not the intention to 'test' the foundational hypothesis in an orthodox sense, but rather to use the different frameworks to investigate and contribute to the generation of new theoretical perspectives through empirical findings and theoretical reasoning.

Performing an historical analysis by combining social movement theory and institutional theory provides a view of institutionalization that differs substantially from conventional accounts of this process. The process materializes initially a social movement emerging from market pressures and ecological dynamics introducing new logics and actors. These destabilizing events or processes do not themselves set the field contention and change in motion, but rather the *reactive mobilization* that occurs as the existing players are challenged.

The result is ongoing processes within a field with many and diverse institutional logics and actors interpreting those potentially destabilizing events as representing new threats or opportunities to, or for, the realization of their interest. Over time these social movements either fade away or materializes into some new language or attitude and eventually settles in a new state. If they settle and get structured into an actual field they will, according to DiMaggio and Powell (1983, p. 148), become more similar to one another, and get 'institutionalized' through various processes.

4.2.1 Institutional theory

Institutional theory forms a large and diverse body of research on a broad set of phenomena, and the thesis will concentrate on a few, namely what Hengel *et al.* (2011, p. 6) calls the *neo* Old Institutional Economy (OIE) of Burns and Scapens (2000) and New Institutional Sociology (NIS) particularly expressed in Powell and DiMaggio (1991). These theories are widely used by researchers in various management accounting settings to interpret not only the institutions themselves, but also processes of change (e.g. Kasperskaya, 2008; Leca *et al*., 2008; Modell, 2009; Ribeiro & Scapens, 2006; Siti-Nabiha & Scapens, 2005).

Although having rather different origin and levels of analysis the different variants of institutional theory are sometimes combined as for example when combining NIS and OIE due the potential complementarity among the two. NIS is predominantly a macro-oriented approach, primarily concerned with the diffusion

and spread of organizational models and/or techniques within given populations, although tending to be more towards ceremonial than efficiency ends. OIE on the other hand is a process oriented organization-centric or intra-organizational theoretical framework mainly concerned with the dynamics of organizational change as primarily being path-dependent.

OIE also pays more attention to the role of powerful individuals and organizational groups 'in the forging of tomorrow's rules' (Scott, 1993, p. 296). For example Sharma *et al.* (2010, p. 262) introduce 'how embedded agents influenced by institutional contradictions take collective actions in order to achieve institutional change´ and Zarifah and Siti-Nabiha (2012, p. 41) introduces how transformational leaders 'influence the way people think and introduce new processes' through mechanisms that provide opportunities to create new sense of direction and priorities for the organization.

Whereas NIS regards individual organizations within a given population as passive adopters, OIE is concerned with what is going on within the organization in question. Whereas NIS is introducing *decoupling* (e.g. Meyer & Rowan, 1977) or *loose-coupling* (Orton & Weick, 1990) to explain ceremonial aspects more than the rationale of efficiency, OIE treats the rationale behind *legitimacy-seeking* in line with *efficiency-seeking*, although suggesting *path-dependency* from existing routines as important for the change process. Another aspect of NIS is that of *isomorphism* when organizations facing the same institutional environment tend to look the same.

DiMaggio and Powell (1983, p. 148) observed that 'once disparate organizations in the same line of business are structured into an actual field powerful sources emerge that lead them to become more similar to one another'. They argued that the concept that best captures this process of homogenization is *isomorphism*, where they identified three mechanisms through which institutional isomorphic change occurs, each with its own antecedents: '*coercive* isomorphism that stems from political influence and the problem of legitimacy; *mimetic* isomorphism resulting from standard responses to uncertainty; and *normative* isomorphism, associated with professionalization', and further, 'while the three types intermingle in empirical settings, they tend to derive from different conditions and may lead to different outcomes' (DiMaggio & Powell, 1983, p. 150).

Scott (1995) pursued this insight by suggesting that each of these mechanisms is associated with a different type of institutional order: 'the coercive with *regulative* structures; the normative with the *normative* system; and the mimetic with the *cultural-cognitive* order. Moreover, these orders coexist, interact, and often exhibit diversity such as to cause tension and change'. A broad, inclusive definition of the concept of social institutions is '*Institutions* consist of cognitive, normative and

regulative structures and activities that provide stability and meaning to social behavior' (Scott, 1995, p. 33).

With the offset in the institutional environment being composed of these regulative, normative and cultural-cognitive structures that operate to provide coherence, meaning and stability to a field, Scott *et al.* (2000) emphasize three components of particular importance: institutional logics, institutional actors, and governance systems: *Institutional logics* are the cognitive maps, the belief systems carried by participants in the field to guide and give meaning to their activities; *Institutional actors* function both as carriers and creators of institutional logics; and *Governance systems* are those arrangements that support the regularized control, whether by legitimate regimes created by mutual agreement, by legitimate hierarchical authority or by non-legitimate coercive means. The three components coexist, and interact, and for example changes in governance arrangements are expected to have a strong influence on the prevailing predominant logic and the different types of actors being privileged (Scott *et al*., 2000, pp. 20-21).

In order to connect these three categories (institutional logics, institutional actors, and governance systems) on to the three institutional elements, the *institutional actors* are particularly reflective of the *cultural-cognitive* elements insofar as they embody the constitutive definitions that specify capabilities within the field. The *institutional logics* are made up of both *cognitive* and *normative* elements (belief systems of what it is and ought to be), and the *governance structures* consist primarily of *normative* and *regulative* elements.

4.2.2 Social movement theory

Like organizational theory or organization studies, social movement forms a large and diverse body of research on a broad set of phenomena. There is, therefore, no single definition available, but for example Zald and McCarthy (1979, p. 2) define a social movement as a set of opinions and beliefs in a population, which represents preferences for changing some elements of the social structure and/or reward distribution of a society, representing the social movement's objectives.

To synthesize previous works in social movement theory Doug McAdam, John D. McCarthy and Mayer N. Zald took the initiative to compile and reorganize them into the volume "Comparative perspectives on social movements" (McAdam *et al*., 1996). Here they brought together three broad sets of factors in analyzing the emergence and development of social movements, namely: *political opportunities*, *mobilizing structures, and framing processes*. For example Vogus and Davis (2005) operationalized these factors in their study on elite mobilization for antitakeover legislation in US during the period 1982 – 1990.

Political opportunities embraces how social movements are shaped by the broader set of political constraints and opportunities unique to the context in which they are

imbedded (McAdam *et al.*, 1996, p. 3). The concept of political opportunity structure has been used both as a key explanatory variable (opportunities opens up for political actions) and as a dependent variable (movements make opportunities). In the first case, in regard to the two dependent variables the *timing* of collective action, and the *outcomes* of movement activity. In the second case, movements may reshape the institutional structure and political alignments of a given polity, and help explain how past movements effects the various dimensions of political opportunities (McAdam *et al*., 1996, pp. 31-36).

Mobilizing structures on the other hand mean 'those collective vehicles, informal as well as formal, through which people mobilize and engage in collective action' (McAdam *et al*., 1996, p. 3). Mobilizing structures encompasses routine dynamics and reciprocal interrelationships with both *political opportunity structures* and *framing processes*, including particular 'tactical repertoires', forms of 'social movement organizations', and 'modular social movements repertoires' (McCarthy, 1996, p. 141). Movement-mobilizing structures may be formal or informal, where an example of the first may be 'social movement organizations', protest committees' or 'movement schools'. Examples of the informal ones may be 'activist networks', 'affinity groups', or 'memory communities'. In order to effectively choosing mobilizing structures, activists must successfully *frame* them as useable and appropriate to the social change tasks to which they will be put. *Political opportunity*, on the other hand, is central in shaping the available range of mobilizing structure, as particular mobilizing structures will be more or less useful for taking advantage of any existing political opportunity (McCarthy, 1996, pp. 149-150).

Framing processes is a conceptual cluster of culture, ideology and frames. They are linked because they are the topics that deal with the content and processes by which meaning is attached to objects and actions (Zald, 1996, p. 262). 'Culture' is here regarded as the shared beliefs and understandings, mediated by and constituted by symbols and language, of a group or society. 'Ideology' is on the other hand seen, as a set of beliefs that are used to justify or challenge a given social-political order and are used to interpret the political world. 'Frames' are the symbolic representations, or cognitive cues or specific metaphors used to settle or cast behavior and incidents in an evaluative mode and to advocate alternative modes of action. Framing processes is regarded as a strategic activity where internal leaders and cadre debate alternative goals and visions for the movement, and externally by countermovement actors, bystanders and state officials, opposing the movement. Framing takes place in the context of larger societal processes where cultural contradictions and historical events may contribute.

There are many examples available from literature of such movements such as, for example, women's movement in the United States at the beginning of the 20th century (Clemens, 1993), the microbrewery movement in United States (Carroll &

Swaminathan, 2000), community based, non-profit recycling centers in the United States (Lounsbury *et al*., 2003), and mutual companies in American fire insurance (Schneiberg, 2002). These last two examples concern how actors institute alternatives to markets, hierarchies and the corporate form. Here researchers have demonstrated that social movements can shape the composition of fields and stimulate path creation by promoting new kinds of forms (Schneiberg & Lounsbury, 2008, p. 664).

The example of the community based, non-profit recycling centers in the United States (Lounsbury *et al*., 2003), examines how social movements contribute to institutional change and the formation of new industries. The empirical setting is the case of how not-for-profit recyclers and the recycling social movement enabled the rise of the for-profit re-cycling industry. By bridging social movement and institutional perspectives the concept of field frame can help demonstrate in what way industries are shaped by social structures of meanings and resources that support and stabilize practices and social organization. The case shows how social movements can contribute in changing existing socio-economic practices and allow new kinds of industry development by engaging in efforts that lead to the de-institutionalization of field frames (Lounsbury *et al*., 2003, p. 71).

The example of the mutual companies in American fire insurance (Schneiberg, 2002), examines the social, political and institutional conditions for organizational heterogeneity and the production of new organizational forms. By addressing mutual fire insurers as important cooperative alternatives to markets and hierarchies, the study shows that these mutual entities were vehicles by which property owners and agrarian interests challenged corporate consolidation and enabled conditions for autonomous economic development. These mutual entities also envisioned a decentralized ‘cooperative commonwealth’ of farmers, merchants and independent producers resting on a socio-industrial order characterized by anti-monopoly social movements and political struggles against corporations (Schneiberg, 2002, p. 39).

4.2.3 A combined framework

Using a combination of social movement theory and institutional theory is not new within the social sciences (cf. e.g. Davis *et al.*, 2005; Davis *et al*., 2008; De Bakker *et al.,* 2013). What is relatively new, however, is the attempt to make a synthesized framework combining the two. The analytical framework presented here consists of a synergetic combination of independently developed frameworks, where Scott *et al*. (2000) developed one for studying institutional change (cf. this section 4.2.1) and McAdam *et al*. (1996) developed one for studying social movements (cf. this section 4.2.2). In their combined analytical framework, McAdam and Scott claim their aim is to ‘begin to craft a broader and stronger foundation for describing and explaining organizationally mediated social change processes in modern society’ (2005 p. 14).

According to Den Hond and De Bakker (2007) social movement literature and institutional change literature have several interesting points to offer and could well be combined, especially mentioning the advantage of McAdam and Scott's (2005) framework where they propose viewing organizational fields as the fundamental unit of analysis, pointing to the roles of different actors during episodes of field level change, and that studies of field frames and institutional strategies provide useful starting points in this direction (Den Hond & De Bakker, 2007, p. 920).

When the synthetic framework of McAdam and Scott was introduced in 2005, it was illustrated through two cases, where the first was *The Emergence, Institutionalization, and Restructuring of the Health Care Field.* Here, their point of departure was an empirical study of changes occurring in a local region in the years 1945-1995, but to account for these changes they had to attend to structures and forces operating at wider state and national levels. The second case was *The Emergence, Development, and Institutionalization of the "Rights revolution"*. Here they revisited a movement-centric account. The intention in the two cases is to add texture and new emphasis offered in earlier works by applying the synthetic framework.

5. CONTRIBUTIONS FROM THE THESIS

The first article addresses the emergence of the Danish district-heating sector by combining social movement theory and organizational theory to answer the following questions:

1. How does the framework of McAdam and Scott (2005) contribute to analyze the history and development of the Danish district-heating sector?
2. How may the interaction between movement mobilization and institutional processes in the organizational field of Danish district heating be illustrated?
3. How does one explain the significant penetration of district heating in Denmark?

The *first* contribution is the application of the complete synthetic framework of McAdam and Scott (2005) where they combine movement theory and organizational theory, and institutional theory in particular (cf. research question 1). However, it is not the first time the framework is used, as other researchers have mobilized parts of the framework (Den Hond & De Bakker, 2007). Based on this framework, the *second* contribution we have found is that the transition from being a social movement to become institutionalized is not ended in the case of Danish district-heating as the sector is still in a kind of flux between the two (cf. research

question 2). So, instead of having a certain époque in time as a distinct transitional period where the movement transforms to become institutionalized, the transition should be regarded more as a permeating reciprocal process that, in this case, goes on over a prolonged period of time. This indicate the importance of being aware of the antecedent to a sector, as the reminiscences of the original movement may lead to some degree of intrinsic motivation among employees even when reaching institutional settlement.

The *third* contribution of the thesis is regarding how the transition took place in this particular sector, as it was not 'conflicts' as such, but rather constructive ripening of opportunities and entrepreneurial behavior (cf. research question 3). Firstly, there is a co-operative behavior through the early district heating movement. Secondly, the early rivalry between electricity, gas and district heating was by clever politicians turned into a synergetic system where all the three took advantage of each other's strengths and opportunities. Thirdly, there were many commercial interests involved taking advantage of the district heating expansion for making additional profit and thereby enhanced the expansion.

The second article addresses the managerial responses to re-regulation by using institutional theory to answer the following questions:

4. How does the framework of Oliver (1991) reveal strategic maneuvering in a regulated utility sector when exposed to institutional pressures, and how does the same framework assist the contribution to benchmarking literature through empirical findings?
5. How do scope conditions impact the outcome of relative performance evaluation in a voluntary, horizontal and collaborative network of organizations?
6. What are the main issues regarding the benchmarking framework when benchmarking is supposed to enable learning?
7. How is the framework of Cox *et al*. (1997, p. 291) supplemented when incorporating regulatory benchmarking?
8. How may different responses to institutional pressures due to dissimilar scope conditions lay the foundation for greater heterogeneity within a sector?

The *fourth* contribution of the thesis is that it demonstrates how the framework of Oliver (1991) reveal strategic maneuvering in a regulated utility sector when exposed to institutional pressures, and how the same framework assist the contribution to benchmarking literature through empirical findings (cf. research question 4). We have for example demonstrated how the sector have defined and structured their activities around particular functions as administration, production and distribution on the one side, and the matter of operational costs (opex) and capital cost (capex) on the other. This prefabricated 'appropriate' structure is applied independent of the size of the organizations. As the authorities intend to use

the structure for benchmarking the performance of the organizations, the definition and understanding of accounting rules and guidelines become important. Thus the scene is set for strategic responses.

The *fifth* contribution of the thesis is that it identifies that adequate resources available in the regulated organizations to agree and negotiate the meaning of accounting numbers and their definition is a critical factor in a relative performance evaluation context (cf. research question 5). Additionally, the same article identifies that confidentiality is a factor that significantly influences the chances to perform a successful benchmarking project with regard to aspects of learning.

The *sixth* contribution of the thesis regards when benchmarking is intended for learning, as this must take place as a horizontal and collaborative network where the 'benchmarker' and the 'benchmarked' are the same (cf. research question 6). This is opposed to when benchmarking is aimed at achieving control as in regulatory benchmarking, as this takes place in a vertical way. Here the relationship between the 'benchmarker' and the 'benchmarked' companies are that of information asymmetry where the 'benchmarker' imposes a competitive relationship to the 'benchmarked' companies to make them strive to climb in ranking at the cost of others. Additionally, results from benchmarking should be kept confidential and not revealed to a wider audience. This leads to the *seventh* contribution of the thesis as to how the framework of Cox *et al.* (1997, p. 291) is extended to incorporate regulatory benchmarking as well (cf. research question 7). This is done to illustrate the differences between three aims of performing benchmarking, namely to gain superiority (competitive benchmarking), to learn (collaborative benchmarking), or to control (regulatory benchmarking). In other words, in regulatory benchmarking the regulated companies are expected to outperform each other as rivals, leading to no exchange of knowledge between the benchmarked, and thus no reciprocal learning will take place.

The *eighth* contribution of the thesis concerns using a standardized chart of accounts to make organizations comparable through benchmarking to make a sector as a whole more efficient (cf. research question 8). The conclusion is that different response to institutional pressures due to dissimilar scope conditions within a sector may lay the foundation for greater heterogeneity within the same sector. This heterogeneity comes in addition to inherent differences that could be accounted for using stratification. Such dissimilar scope conditions could be when the more resourceful organizations within a sector forms networks to learn how to perform benchmarking where they also learn from each other. Additionally, when they are forming part of larger organizations involving other sectors, they also learn from these sectors. This benchmarking knowledge is available for the resourceful organizations to curb the action of the regulator before regulation is put into action, or to various sorts of gaming when the benchmark regulation eventually is put into action.

The third article addresses the formation of the six-city benchmarking model by using institutional theory, to help answer the following questions:

9. How could the combination of OIE and NIS serve as a complementary tool for analytical purposes when studying the role of benchmarking in organizational change?
10. How may the dilemma of benchmarking leading to either learning or politics be explained?

The *ninth* contribution from the thesis is that it demonstrates how OIE and NIS provide alternative ways of seeing and offers a synergetic tool to study the role of regulatory benchmarking in organizational change within a sector (cf. research question 9). NIS demonstrates the way influence is exerted by institutional requirements and fashionable trends, whereas OIE suggest the underlying field level-structures and the mechanisms required to cope with them, while at the same time being impacted by existing routines and path-dependency. So, in addition to lay the ground for achieving greater efficiency and cost control through attending to a benchmarking exercise, the same exercise is also seen as a fashionable project and signals that the attendees are proactive and level with the society at large regarding management control systems. At the same time it signals to the outer world they are taking extraordinary precautions, and thereby gaining legitimacy.

The *tenth* contribution from the thesis is that it demonstrates that organizations can learn from each other, and from each other's experiences, such as, for example, when attendees in a horizontal and collaborative benchmarking project are exchanging experiences of more process-related matters based on their relative performance evaluation (cf. research question 10). It is also demonstrated that the same attendees use the benchmarking project for agenda setting and decision-making, thereby leading to politics. So, instead of benchmarking leading to either learning or politics, there are signs of both, indicating these two aspects are not mutually exclusive.

6. PRACTICAL IMPLICATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Introducing a standardized chart of accounts across a diverse set of companies is according to Jamasb and Pollitt (2007, p. 6172) note not an easy and straightforward task, although the authors previously had argued that it *was* so (Jamasb *et al.,* 2003). Further, using accounting data in benchmarking, can be troublesome (cf. Tagesson, 2007, p. 259), due to data quality, comparability and the

struggles involved in designing meaningful performance indicators based on different accounting systems (Braadbaart & Yusnandarshah, 2008, p. 431; Walter *et al.*, 2009, p. 231).

The study of the six-city project has demonstrated how the interpretation and understanding of accounting rules and standards differ among the companies and how order and interpretations are negotiated in a social process. If similarities and differences are not dealt with in this process it seems unlikely that a standardized chart of accounts will actually contribute to standardizing data and ensuring a sufficient data quality for benchmarking purposes. Additionally, it became more and more evident during the benchmarking process, that accounting principles in relation to assets, including depreciations, represents a specific challenge. No easy solution to this problem is obvious because most district heating companies do not have a (traditional) balance sheet where assets are recognized.

Bringing six somewhat similar companies together and agreeing on a common understanding of accounting based indicators was possible. But introducing a standardized chart of accounts based on a mutual agreement among 400 heterogeneous companies within the Danish district heating sector will probably be extremely complicated if not impossible. Among the key factors that seems to have contributed to the agreement realized among the six-city group is probably that it was a small group of companies comprised by large companies with the technical expertise to solve the challenges in relation to the accounting principles. Further, it is important that it was agreed to keep the ranking confidential. This was a lessen learned ten years earlier when the same companies attempted to develop a benchmark model but failed because ranking was not held confidential.

From the perspective of the District Heating Association and the Regulatory Authorities the main challenge in adopting a benchmarking model whether for regulation or other purposes is the development of a standardized chart of accounts. This was also the point of departure when the six-city companies were initially approached and interviewed. However, the results from the study indicate paradoxically, that it may be the mere existence of benchmark-based data that are hindering the development of the standardized chart of accounts. Authors like Bevan and Hood (2006) have in their studies of benchmarking regimes in the public sector concluded that performance evaluations and rankings of performance indicators are not without problems and that a number of behavioral consequences of benchmarking should not to be ignored. Whether the benchmarking is based on accounting numbers or other data the problems are likely to be the same – and the technical challenges in defining chart of accounting may be inferior compared with the behavioral challenges.

A case for future research could be when the re-regulation of the Danish district-heating sector is ultimately implemented, recalling the work of Barley and Tolbert

(1997), who state that given the difficulty in spotting organization or fields of interest where changes are going to take place in order to have a 'before and after' design, researchers may have to stick to retrospective accounts and archival data even if they are subject to rational reconstruction. In this case, interviewing of the key personnel was conducted at the beginning of the benchmark model project to establish accounts of the previous attempt to construct a benchmark model among the same organizations in 2000, before the authorities launched their idea of future benchmark regulation in 2006. So, a natural follow-up would be to conduct research in the future (i.e. to characterize an 'after' situation).

Another case for future research is to perform additional applications of the framework of McAdam and Scott (2005) to establish more illustrations of the usefulness and limitations of the framework. This is particularly interesting as the study of the Danish district heating movement and how it has evolved into a highly institutionalized sector may also be applied to other similar situations in society. The Danish district heating movement demonstrates not only how ordinary people may find and develop clever solutions to satisfy fundamental needs, or to solve challenges such as, for example, recycling (Lounsbury *et al*., 2003) or mutual fire insurance (Schneiberg, 2002), but also how reminiscences of the original movement may lead to some degree of intrinsic motivation among employees even when reaching institutional settlement.

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CHAPTER 2: BENCHMARKING

1. INTRODUCTION

Benchmarking is an often-used modern term associated with a broad range of human endeavor. According to the online Oxford Dictionaries, the noun 'benchmark' is defined as 'a standard or point of reference against which things may be compared', such as, for example, 'a surveyor's mark cut in a wall, pillar, or building and used as a reference point in measuring altitudes'. The verb 'to benchmark' is likewise defined as activity aiming to 'evaluate (something) by comparison with a standard'. In contemporary societies, we encounter benchmarking and its consequences both directly and indirectly. For instance, as citizens we often see how politicians use benchmarking to compare with other countries to ground or solicit support for their policy. Or, employees may see how labor unions perform benchmarking surveys, which can also be deployed by employers through trade or professional associations. But benchmarking is also found elsewhere.

The Danish Energy Agency has posed institutional pressure for benchmark regulating the Danish district-heating sector and is therefore attracting attention within the sector. But, benchmarking is indeed also interesting to study in general and has become increasingly important to organizational improvement processes (Chen, 2005; Dawkins *et al*., 2007), where current states of affairs are considered undesirable (due to inefficiency or ineffectiveness) until replenished by more preferred states of affairs, based on evidence or perhaps a belief that such states are at least partially achievable. This promise of benchmarking has instigated numerous approaches for how to take advantage and eventually also led to ambiguity regarding what benchmarking really is.

This ambiguity can be found in the evolution of benchmarking were it has traveled from being a management tool to also become a regulatory instrument (Papaioannou *et al*., 2006). According to Arrowsmith *et al.* (2004) the evolution as a management tool at company level took four broad stages: comparative statistical activity, competitive benchmarking, generic benchmarking and strategic benchmarking which also is associated with the concepts of the 'learning organization'. Again, at company level, Arrowsmith *et al.* (2004, p. 313) identifies three main types of benchmarking where the first is a bottom-up process of networking and experience sharing. The second is a top-down approach used by large companies as a means of both control and learning, were learning sits uneasily with the first. The third aspires to the original Xerox model being 'the continuous

process of measuring products, services, and practices against the toughest competitors or those companies recognized as industry leaders' (Cox *et al*., 1997, p. 287).

When used in a business context benchmarking could be defined as 'simply the process of measuring the performance of one's company against the best in the same or another industry' (Stevenson, 1996). The concept of benchmarking is well researched and there are various identifiable trends in the epistemology of benchmarking (Moriarty & Smallman, 2009). For example Spendolini's review of benchmark literature found 49 definitions for benchmarking, which he reduced to be considered as a 'continuous, systematic process for evaluating the products, services, and work processes of organizations that are recognized as representing best practices for the purposes of organizational improvement' (Spendolini, 1992, p. 9).

But, there are challenges associated with the term 'benchmarking' that goes beyond how to define it, where and when to use it, and how to technically applying it. First of all, benchmarking is sometimes called something else, which contributes to make 'benchmarking', as a term, difficult to comprehend. Secondly, as the benchmarking exercise may serve different multiple non-exclusive motives simultaneously, benchmarking might instigate conflicts. Thirdly, if 'learning' is an overarching outcome of benchmarking (e.g. Askim *et al.*, 2007; Kyrö, 2003), then another challenge from having different motives is how the intended aspect of 'learning' from benchmarking shall be achieved. These three challenges will be presented in this chapter, and further elaborated in the chapters four and five in the thesis, but first of all a literature review is performed to set the scene.

The literature on benchmarking is indeed voluminous and diverse, and to cover as much of this field as possible the literature review is partly performed as a meta-review[2]. This will enable looking at large amounts of literature to study their concerns and themes, as well as their categorizations and typologies, by using already published reviews.

The review of literature on benchmarking in this chapter is split into three sections, where the first is a meta-review on general benchmarking literature, followed by a meta-review on literature on public sector benchmarking. Thirdly a specific review is performed on public sector literature underpinning specific aspects of benchmarking to support one of the challenges in the project, namely benchmarking in networks. Then a section on different challenges of benchmarking follows, and lastly concluding comments and areas for further research.

[2] *See e.g.* *http://community.cochrane.org/cochrane-reviews* *or* *http://www.sfi-campbell.dk/the_campbell_method-8042.aspx*

2. WHAT IS BENCHMARKING: PERSPECTIVES AND TYPOLOGIES

This meta-review of general benchmarking literature builds on earlier reviews and conceptual work, such as Cox *et al.* (1997); Yasin (2002); Dattakumar and Jagadeesh (2003); Kyrö (2003); Anand and Kodali (2008); Moriarty (2011) and Hong *et al*. (2012). In this instance the majority of hits appeared in the journal 'Benchmarking: An international Journal'. As the name indicate, this is a journal having benchmarking at its core, and the literature reviews also indicate an almost complete absence of regulatory benchmarking, and even benchmarking in public-sector organizations is rare. The reviews we have found in this category are quite different with regard to both ontology and epistemology, even though they concentrate on classifying benchmarking as such in some sort of taxonomy.

Cox *et al.* (1997)

Cox *et al. (*1997) introduces 'Benchmarking as a mixed metaphor: disentangling assumptions of competition and collaboration' to develop a model to predict the degree of competition and collaboration involved in relationships between benchmarking parties. They examines the management literature on benchmarking and lists a multitude of different labels for benchmarking on the basis or practice that is being benchmarked: internal benchmarking, competitive benchmarking, industry benchmarking, generic benchmarking, process benchmarking, performance benchmarking, strategic benchmarking and global or international benchmarking. They claim the language of competition pervades the benchmarking literature and represents a vertical attitude where organizations strive to gain position over others.

They introduce the following Table 3 to present competitive benchmarking and collaborative benchmarking as alternative frameworks:

	Framework	
Feature	Competitive benchmarking	Collaborative benchmarking
Aim	Superiority	Learning
Relationship	Competition/rivalry	Collaboration/partnership
Action	Unilateral, voluntary	Joint, responsive
Image/metaphor	Vertical, reference point/standard	Horizontal, visiting

Table 3 Alternative frameworks of benchmarking (From: Cox *et al.,* 1997)

The rationale behind the framework in Table 3 is the claim of Cox *et al.* (1997) that there are two main purposes of benchmarking namely competitive and collaborative, and they are regarded as opposing. Competitive benchmarking is

aiming for superiority at the cost of others, the competitors. In this case, the benchmarking action is voluntary from the initiators side, and performed unilaterally in a vertical mode to achieve reference points or standards as 'best practice'. Collaborative benchmarking is, on the other hand, based on a framework of joint value maximization through learning. It is a partnership strategy for coping with turbulent, complex environments. In this case, the benchmarking action is responsive and performed in a joint, horizontal mode where partners are invited to visiting each other. In other words competition and collaboration can coexist in a private sector to increase the overall competitiveness of the industry.

Yasin (2002)

Yasin (2002) reviews the published works related to benchmarking and the author identified and classified 159 representative key works addressing specific operating domains. A total of 65 address general organizations /applications, 43 address support functions, 22 address manufacturing, 32 address services, while only three articles relate to the public sector. According to Yasin (2002, p. 218), managers in competitive, dynamic operating environments tend to seek new ways in which to enhance operational efficiency and strategic effectiveness. In this respect benchmarking strategies, tactics and activities seem to be relevant and timely concerns, especially in light of growing e-commerce and supply chain management practices.

The author claims there is an increasing maturity of benchmarking field in terms of scope, application, theory and practice after having found more than 5.000 benchmark related hits from a literature search using several electronic databases. Yasin (2002) has reviewed literature related to benchmarking from 1986 to 2000, especially with focus on manufacturing, service and public sector operational environments. The author found early stages of benchmarking stressing a process and/or activity orientation, while the later stages indicate expansion of benchmarking to include strategy and systems. A major claim from the review is the field of benchmarking still suffers from lacking theoretical developments to guide its multifaceted applications.

The author lists five concluding remarks (Yasin, 2002, pp. 232-233), first of all pointing to the academic community is lagging in terms of providing and advancing models and frameworks that integrate the many facets of organizational benchmarking. Additionally, the benchmarking literature reviewed lacks approaches to quantifying the costs and benefits of benchmarking, as well as benchmarking research and applications lack a system-wide organizational approach. It appears that the development and utilization of benchmarking practices continue to occur primarily in service organizations and in service and support functions of all other organizations. And finally the applications of benchmarking in the published literature addressing the public sector appear to be slow in forthcoming. Additionally, the author expresses concerns about the field of

benchmarking, as it remains to large extent without a unifying theory to guide its development.

Dattakumar and Jagadeesh (2003)

Dattakumar and Jagadeesh (2003), on the other hand, present an overview of previous reviews of literature on benchmarking presenting a list of more than 380 articles from 1980-2002 classified in various ways, and claim saturation is reached. The authors offer what they claim to be a comprehensive review of literature on benchmarking to help researchers, academicians and practitioners to take a closer look at the growth, development and applicability of this technique. In doing this they also offer a different scheme of classification to categorize the growth in literature and also the coverage of benchmarking literature into four specific groups: 'general aspects or fundamentals' (170 publications), 'specific applications and case studies' (164 publications), 'innovations/extensions/new approaches' (27 publications), and 'applicable to education sector' (21 publications).

The authors remark that benchmarking technique has seen a steady growth and is heading towards maturity level (Dattakumar and Jagadeesh, 2003, p. 191), which also was suggested by Yasin (2002). The authors also agree with Yasin (2002) that a cost model for estimating the overall cost incurred in carrying out benchmarking exercise needs to be established. Additionally, the authors address 'duration of benchmarking exercise', 'human resource in benchmarking activities' and 'selecting benchmarking partners' as areas for further research.

Another concluding remark is when superior performers are unwilling to disclose business practices, which could be a major deterrent in the benchmarking process. And if hey do, the adapting organization might not get the benefit hoped for, and success rates may also significantly differ across organizations. According to the authors, these issues should be dealt with to make benchmarking a preferred technique in the quality improvement efforts. Another important issue concerns small and medium sized businesses, which are normally tight on budgets, implying that any commitments towards benchmarking have to be justified in terms of assured returns (Dattakumar and Jagadeesh, 2003, p. 192).

Kyrö (2003)

Kyrö (2003) revise the concepts and forms of benchmarking by extending Watson's (1993) five categories of benchmarking with 'benchlearning' and 'network benchmarking'. Focus in Kyrö (2003) is also on how public and semi-public sectors focus more on cooperation than competition, and claims theorizing of the benchmarking phenomenon is difficult, as the phenomenon itself is dynamic and changing. According to the author (cf. Kyrö, 2003, p. 210) the objective of the paper is twofold. Firstly, to review and modify the concept of benchmarking as introduced by Watson (1993) and modified by Ahmed and Rafiq (1998) by including two newcomers, namely 'competence benchmarking' and 'network

benchmarking' as shown in Figure 4 below.

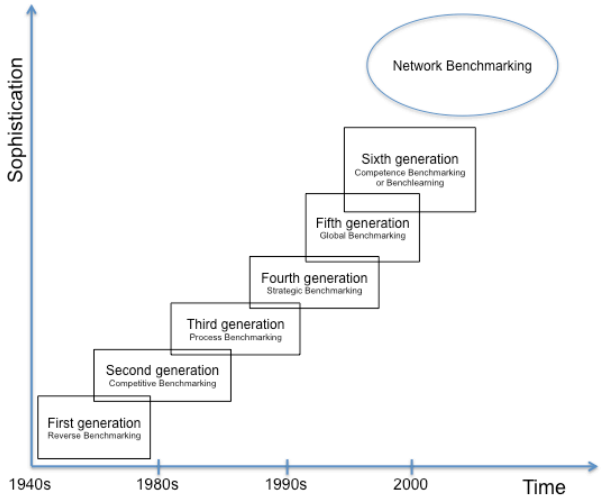

Figure 4. Different generations of benchmarking. Source: Kyrö (2003, p. 214)

The model originates from Ahmed and Rafiq (1998, p. 288), but is supplemented with 'Competence benchmarking' or 'Benchlearning' and 'Network Benchmarking'. Kyrö (2003) also comments on the learning as a part or core of benchmarking and how this aspect has changed from learning from others to be accompanied with learning with others. The change in learning and its orientation do not only extend the scope of learning into internal learning processes, but also affect the benchmarking partners as contemporary competition is not so heavily focused, but rather the mutual problem for the future such as, for example, to identify the practices that help in adaption to changes.

The article concludes with a revision of our understanding of the theoretical bases of benchmarking, encouraging both theoretical and empirical studies as well as their interaction. The role of the 'benchmarker' is also explicated to improve performance and decrease unintentional outcomes. This article is especially relevant as it extends previous taxonomy to include network benchmarking.

Anand and Kodali (2008)

Anand and Kodali (2008) is 'benchmarking the benchmarking models' by critiquing previous attempts to categorize benchmark models. They also points to (user's) practitioner's confusion on choosing model from available models as each model varies in many aspects ending up with a proposal for a universal benchmarking model, which they claim can be applied to all types of

benchmarking. Eventually they end up confirming Spendolini's (1992) view of only two kinds of benchmarking exist, namely internal and external.

Anand and Kodali (2008) is a conceptual type of literature review of benchmarking in search for a single, exemplary framework. They aim to question previous attempts to classify benchmarking into different types or classes and thereby the unique benchmarking models that are developed for each type of benchmarking. Instead they aim to propose a universal benchmarking model, which can be applied for all types of benchmarking. To support their attempt they make a brief overview of different classification schemes and types of benchmarking, where they for each author list the number of classifications and the name of each classification and type. They conclude that benchmark cases like strategic, product, process, functional, etc. can be listed under either internal or external.

Their next major step is to make a comparative analysis of different benchmarking models where they are 'benchmarking the benchmarking models' against the methodology (i.e. planning, analysis, integration and action) in the Xerox benchmarking model. They conclude through statistical observation with a universal benchmarking model consisting of 12 phases, which includes 54 steps. Although they admit the proposed framework is highly conceptual and has not been validated by implementation to assess its effectiveness.

Moriarty and Smallman (2009)

Moriarty and Smallman (2009) is a general type of literature review of benchmarking with the aim to review its epistemology and identify methodological elements of a theory of benchmarking. More specifically the aim is to review primal definitions of what benchmarking is, and what is benchmarked within an organizational perspective, in order to deliver a provisional definition of benchmarking. They claim literature is indeed pragmatic as being process-driven, case-oriented and generic. Although theoretical aspects are considered when organizational learning and reasoning, as well as economic enhancement from benchmarking are in focus.

The authors claim benchmarking is not simply about change, but rather the identification and successful implementation of a superior state of affairs in the anomalar's organization. A theoretical prerequisite for benchmarking should be consistent with current organizational paradigms. They finally conclude that benchmarking exists, but its essence is obscure (Moriarty & Smallman, 2009, p. 499), claiming they will establish a theoretical basis for benchmarking in the future.

Moriarty (2011)

Moriarty (2011) disagrees with Anand and Kodali (2008) and claims only a single form of benchmarking is supported. Moriarty (2011) builds on the previous review by Moriarty and Smallman (2009) aiming to find a theory of benchmarking. It is a

conceptual paper using a causation approach introducing both classical (e.g. Aristotle) and modern (e.g. Peirce) theories of causation. Property as well as nomological relationships between anomalar and exemplar is examined and combined, and applied to benchmarking. Thereafter process and purpose relationships are studied and conclude the reason for improvement is survival (Moriarty, 2011, p. 598). The next step is to combine the findings to describe the essence of benchmarking, distinguishing between 'process' and 'improvement', where process is effective if it identifies the potential for improvement and the improvement is effective if benchmarking increases anomalar welfare as a result.

The theory of benchmarking is elaborated through defending, warranting and qualifying a set of conditions supporting only one single form of benchmarking. The theory confirm that self-knowledge is prerequisite for effective benchmarking and anomalous state of affairs must first be understood in terms of their properties, rules, statistical variance, welfare and teleology before anomalars engage in the benchmarking process. A key implication of the Theory is the reduction to general statements where logical sufficiency is most likely attained in simple, rule-based, purposeful situations as when cash flows are tenuous and production is fairly simple (Moriarty, 2011, p. 607).

Hong *et al*. (2012)

Hong *et al.* (2012) on the other hand presents a literature review on benchmarking practices in order to achieve better perspectives for emerging benchmarking research streams. The paper examines the benchmarking literature and presents a framework suggesting evolving patterns of firms' benchmarking practices published in major journals from 2001 to 2010 (Hong *et al*., 2012, p. 444). As a result five research dimensions for benchmarking are discussed in terms of: strategy-driven, operational effectiveness-based, technical efficiency-based, and micro-macro integrative benchmarking for sustainable competitive advantage.

Concerning research issues with regard to benchmarking the following are emerging: First there is a growing need for benchmarking studies of complex business practices as customer and market requirements become more complex in nature. Second, there is an increasing need to benchmark global industry standards with regard to globally networked business models. Third, benchmarking in the public sector needs to receive more research attention. Fourth, benchmarking in healthcare is another promising research issue, as although benchmarking has been widely used, its nature, process and outcomes have remained ambiguous, leaving a gap between policy and practice (Hong *et al*., 2012, p. 453).

Section summary

According to this meta-review there has been a steady research on benchmarking since the 1990ies and up to today. The reviewers' perspectives are differing from having an empirical approach of what has been studied in earlier research, to a more

theoretical as for example to find a common theory of benchmarking. Findings include presenting main purposes of benchmarking to be either competitive or collaborate, which are regarded as opposing. These purposes are also presented as a typology, where the 'competitive' is performed in a vertical mode by the initiator of the benchmarking exercise to gain superiority at the cost of others. The 'collaborate', on the other hand, is performed in a horizontal mode where benchmarking participants are partners.
Additionally, different generations of benchmarking are presented according to their degree of sophistication, where the taxonomy is extended to include 'network benchmarking' having learning at its core. Others categorize benchmarking to be either 'internal' or 'external', which could be regarded as a supplementary dimension to the competitive-collaborative typology.

3. BENCHMARKING LITERATURE SPECIFIC FOR THE PUBLIC AND SEMI-PUBLIC SECTOR

This meta-review of public sector specific benchmarking literature builds on earlier reviews and conceptual work, where most articles appear in journals according to the sector in which benchmarking is imposed by the regulators. Relevant examples of these are: public sector (Braadbaart & Yusnandarshah, 2008; Dorsch & Yasin, 1998; Bowerman *et al.,* 2002; van Helden & Tillema, 2005), electricity sector (Jamasb *et al*., 2004), water sector (Walter *et al.*, 2009), and the utility sector (Lodge & Stern, 2014).

Dorsch and Yasin (1998)
Dorsch and Yasin (1998) argue that there should be a distinction between private sector vis-à-vis the public sector and reviewed 373 articles and abstracts to determine the extent to which benchmarking has been utilized in the private sector vis-à-vis the public sector. According to the authors (cf. Dorsch & Yasin, 1998, p. 95) the objective of their paper is twofold. Firstly, they review and classify the body of knowledge related to benchmarking. Specifically, they investigate the practice, evolution, and role of benchmarking in the manufacturing, service, and public sectors.

Secondly, based on their literature review, gaps are identified and recommendations to deal with these gaps are advanced. In the process, conceptual frameworks that attempt to shed light on the cost/benefit aspects of benchmarking and its relation to organizational systems and objectives are formulated and discussed. The utility of applying benchmarking in the public sector is illustrated by a public health care

organization, while the conceptual framework is presented in the context of public sector operations.

The timeframe for the authors' study of published literature related to benchmarking spans from the appearance of the earliest benchmarking articles, in 1986, through the end of 1995. In addition, to these articles, many books that were printed during the study period were considered as well, adding up to 373 articles and abstracts. These 373 articles were reduced to 121 representative publications, where each of these publications has been designated as either a practitioner-type or an academic-type article, depending on the type of journal in which it appeared.

The review derives six extensive conclusions (Dorsch & Yasin, 1998, pp. 104-109): First, the academic community is lagging in terms of providing and advancing models and frameworks that integrate the many facets of organizational benchmarking. Second, the literature reviewed revealed that most of the research related to benchmarking lacks systematic approach in terms of assessing the impact of benchmarking on the organization. Third, benchmarking literature related to quantifying costs and benefits of benchmarking is lacking, causing managerial hesitation to invest in benchmarking especially in the public sector. Fourth, it appears that the early development and utilization of benchmarking practices has occurred primarily in service organizations and in service and support functions of all organizations. Fifth, applications of benchmarking in the published literature addressing the public sector appear to be slow in forthcoming. Finally, benchmarking has the potential, when utilized systematically, to enhance organizational efficiency and effectiveness for organizations in both the public and private sectors.

The literature review conducted by the authors also found that the expansion of benchmarking information, innovations, and case studies in the studied time period occurred primarily in practitioner publications, although several articles appeared in the academic literature.

Bowerman *et al.* (2002)

Bowerman *et al.* (2002) seeks to explain how benchmarking actually works in the public sector by drawing on two previous research projects where the first involved 50 interviews in four UK local authorities and 30 interviews with corresponding regulatory bodies. The second was based on a large-scale questionnaire survey into the nature and prevalence of benchmarking in the UK. Of the 725 completed questionnaires that were returned 21 percent where from the public sector. This second project also included case studies in a UK local government. Additionally, their literature review is divided into private sector literature and public sector literature.

The authors conclude that there are certain important distinctions between benchmarking in the private sector and in the public sector. First of all, benchmarking in the private sector is voluntary, but in the public sector it tends to be compulsory, either by the issue of accountability where taxpayers have a right to know, or also by regulation. Second, for the private sector the information generated through benchmarking is confidential to the organization, giving rise to e.g. benchmark clubs, which both maintain anonymity and facilitate the exchange of commercially sensitive data. For the public sector, the opposite is the case, as here accountability is important being the antagonist to confidentiality (Bowerman *et al.*, 2002, p. 434).

They also conclude that 'the reasons behind benchmarking within the public sector are confused as pressures for accountability may mitigate against real performance improvement; and an appropriate balance between the use of benchmarking for control and improvement purposes is yet to be achieved' (Bowerman *et al.*, 2002, p. 429). Following the reasoning of Bowerman *et al.* (2002), leads further to the issue of defensive benchmarking which they claim has much in common with compulsory benchmarking in that both meet the need to demonstrate accountability (Bowerman *et al.*, 2002, p. 441). This defensive benchmarking is done primarily to demonstrate to prove an external agency that they are doing well, but may also be undertaken to protect the organization from potential criticism, such as, for example, to stay ahead of an upcoming compulsory benchmarking, or to prepare for an external review (Bowerman *et al.*, 2002, p. 440).

The contexts of 'accountability' and 'compulsory' are closely interlinked and much of what has been known as benchmarking in the public sector has been done to support accountability by providing quantitative, and therefore the measureable, aspects of performance. While this, according to Bowerman *et al.* (2002, p. 444), may create pressure and a basis for improvement, it is not the primary focus of benchmarking, as the production of the metrics to satisfy an external agent is an end in itself, and probably highly politically motivated.

Jamasb *et al.,* 2004

Jamasb *et al.,* (2004) study regulators, which have adopted incentive regulation schemes that rely on benchmarking to improve the efficiency of electricity distribution networks. In their study they distinguish and assess the ways in which regulatory benchmarking may effect organizational behavior and analyze some possible implications. They then employ a data set of distribution activities originating from a sample of US electric utilities to illustrate strategic issues the regulatory body may encounter when using frontier-based benchmarking methods (such as Data Envelopment Analysis [DEA] or Corrected Ordinary Least Squares) in incentive regulation.

The authors are particularly concerned with the gaming aspects of regulatory benchmarking as strategic behavior from the regulated organizations to increase profits without achieving real efficiency gains. In this regard they also remind the reader that gaming in this sense is not necessarily illegal and should be viewed within the regulatory context as optimizing within accepted accounting rules as well as fiscal, legal, and corporate statutes and policies (Jamasb *et al*., 2004, p. 826).

In their argumentation they point to two types of strategic behavior, where the first type of gaming is behavior that may not have a material effect on the efficient operation of the firm. For example if they decide to shift costs from operating to capital cost, or influence the choice of output variables to affect measured relative performance. The second type of gaming is behavior that distorts the efficient operation and investment decisions of the firm by for example increasing its cost base, which may lead to a new rate case. Both of these could also lead to other firms being measured differently if using cost-based DEA models (Jamasb *et al.,* 2004, p. 829).

Jamasb *et al*. (2004) conclude that regulators using the frontier methods have experienced three major types of gaming strategies. The first is associated with cost issues, such as, for example, shifting costs and assets across sectors, costing rules, definitions, and rate of return. The second category involves gaming of the methodology used by the regulators such as influencing the use of benchmarking models to be used, choice of input and output variables, and information disclosure. The third is concerned with utility mergers. They conclude that gaming is to be viewed as regulatory model optimization rather than fraudulent, as all gaming opportunities must be conducted under the prevailing laws and regulations (Jamasb *et al*., 2004, p. 830).

The authors also conclude when firms are being regulated through benchmarking, the regulated firms need to conduct their own benchmarking analysis in order to: a) examine the effects of the regulator's choice of method, variables, etc., b) analyze the effect of possible gaming of other firms and c) evaluate benefits and losses of mergers involving own firm or competitors and to convey their findings to regulators (Jamasb *et al*., 2004, p. 842).

van Helden and Tillema, 2005

van Helden and Tillema (2005) argue public sector benchmarking is of increasing importance, where organizations compare their performances to reveal differences as well as to show ways of improving performance. Their aim is to develop a theoretical framework that can be used to investigate public sector benchmarking. The empirical data stems from a benchmarking project within wastewater treatment by the Dutch water boards (van Helden and Tillema, 2005, p. 337).

They raise the following hypothesizes: benchmarking will improve the average

performance of organizations; benchmarking is a stronger incentive to improve performance of poorly performing organizations than for better performing organizations; benchmarking will diminish performance differences between organizations (van Helden and Tillema, 2005, p. 341), with many sub-questions.

In their study they particularly use insight from Oliver (1991), which is based on neo-institutional theory and resource dependence theory, and end up with many findings such as, for example, 'outcomes', 'motivations and processes' and 'non-improvement reactions to benchmarking' in particular, presented in a table. They finally conclude that economic reasoning can only address particular explanations for response patterns of public sector organizations towards benchmarking, and the inclusion of institutional reasoning turned out to be useful as complementary explanations, especially regarding broadening the explanation of response patterns from outcomes to motivations and processes (van Helden and Tillema, 2005, p. 358). They finally conclude that their benchmark theory requires empirical studies for corroboration and refinement.

Braadbaart and Yusnandarshah (2008)

Braadbaart and Yusnandarshah (2008) assess the evolution of public sector benchmarking published between 1990-2005. They point to a theoretical and conceptual rift that runs through the literature, with those advocating public sector benchmarking as a tool for managed competition on one side, and those promoting benchmarking as a voluntary and collaborate learning process on the other. A first challenge for future public sector benchmarking researchers is to close this gap, and the second challenge concerns empirical studies that capture the effects of different benchmarking regimes on the public service providers. They also present a list of dos and don'ts for public sector benchmarking (PSB) innovators.

The dos: You should involve practitioners in PSB design and execution. Practitioners are the repositories of knowledge of what works and what doesn't. Second, ensure that you pay sufficient attention to your baseline survey. The devil is in the detail here. Third, pay attention to translating professional goals to the public. Commit yourself to clearly formulated outcomes. The don'ts: First, make sure that your PSB initiative does not become a trophy of bureaucratic or academic infighting. Second, ensure that you do not make your PSB initiative overly technical, for this will make it a target for take-over by groups of mandarins inside the bureaucracy. And third, do not keep your benchmarking initiative out of the public eye. Seek involvement of consumer representatives and the mass media.

Walter *et al.,* 2009

Walter *et al.* (2009) provide a comprehensive survey of available literature of scientific benchmarking in water distribution. They examine studies published during the period 1998 to 2008 representing frontier studies evaluating efficiency

differences. The concern of the studies are scattered, but a central point is the evidently cost interactions when operations include both water and sewage service and such a combination is often seen. Another complicating issue is when comparing utilities with own water extraction and treatment plants with those that may purchase treated water from third parties and are only active in distribution, where cluster analysis could be helpful (Walter *et al.*, 2009, p. 230).

They conclude that even though current efficiency analysis of water distribution is significant, the direct translation of efficiency values into regulatory objectives is unlikely to occur. Further, they cannot establish the merits of public vs. private ownership, and should therefore always be evaluated within the institutional and regulatory context. And last, but not least, they conclude data availability and quality are of extreme importance for the analysis (Walter *et al.*, 2009, p. 231).

Lodge and Stern, 2014

Although Lodge and Stern (2014) is not a meta-review of literature as such, it is concerned with the evolution of incentive-based and competition-driven regulation during the more than thirty years since the 'Littlechild Report'. This report, putting forward the case for an incentive-based and competition-driven regime for soon-to-be-privatized British Telecommunications (BT) set the standard for subsequent reforms in utility regulations (Lodge & Stern, 2014, p. 146).

Their article places the debates surrounding utility regulation in context and explores the original theoretical arguments that underpinned the Report. Additionally the article considers the contemporary challenges for utility regulation. The article concludes that utility regulation remains a fertile ground for investigation as well as argument regarding developmental, financial, social, and environmental issues.

Section summary

According to this meta-review specifically on benchmarking literature for the public sector, there has been a steady research on benchmarking since the 1980ies and up to today. In the early meta-reviews benchmarking literature is classified to investigate the practice, evolution, and role of benchmarking in the manufacturing, service, and public sector. It is argued that benchmarking in the private sector tends to be voluntary, while in public sector benchmarking tends to be compulsory either by the issue of accountability, or also by regulation. Within the private sector the information generated through benchmarking is confidential to the organization. For the public sector, the opposite is the case, as accountability requires openness.

The contexts of 'accountability' and 'compulsory' are closely interlinked and much of what has been known as benchmarking in the public sector has been done to support accountability by providing quantitative, and therefore measurable, aspects of performance. The pressures for accountability is claimed to mitigate against real

performance improvement, as the appropriate balance between the use of benchmarking for control and improvement purposes is yet to be achieved. Gaming is introduced as a natural consequence of regulatory benchmarking, and to be viewed as regulatory model optimization rather than fraudulent as long as it stays within accepted accounting rules as well as fiscal, legal, and corporate statutes and policies.

A complicating issue when comparing utilities is when their value chain is differing. It is concluded that, even when analyzing comparable entities, the direct translation of efficiency values into regulatory objectives is unlikely to occur. Furthermore, data availability and quality are of extreme importance for benchmark analysis in a regulatory setting. A too technical public sector benchmarking initiative will make it a target for take-over by groups of mandarins inside the bureaucracy. The public eye on the public sector benchmarking initiative should also be involved as well as translating professional goals to the public.

4. REVIEW OF LITERATURE ON BENCHMARKING IN NETWORKS

Benchmarking in networks is of special interest and focus in this thesis regarding the empirical source of data as being the six-city group of companies, constituting a network. By taking offset in the work of Kyrö (2003) literature on network benchmarking is reviewed and research dealing especially with this issue is found. Relevant examples of these are as follows: municipal benchmarking in networks (Askim *et al.*, 2007; Knutsson *et al*., 2012), and a mixture of public and private organizations benchmarking in networks (Saunders *et al.*, 2007).

Askim *et al.,* 2007

Askim *et al.* (2007) assume that benchmarking supports organizational learning and innovation, but empirical evidence on the means-end relationship thus far has been limited. To investigate this they use empirical data from a nationwide Norwegian *voluntary* benchmarking project, consisting of a network of municipalities. The research question is: 'To what extent is organizational learning from benchmarking conditioned by the composition of benchmarking networks, internal organizational processes, political factors, and history?' (Askim *et al.*, 2007, p. 298).

The authors argue that benchmarking has become an important part of contemporary public administration, especially in Northern Europe, North America, Australia, and New Zealand. Benchmarking is used *vertically*, for principals to

monitor the activities of agents (central and local government, and government and private service providers), or *horizontally* as when organizations voluntarily engage independently or with others in systematic search activities, highlighting '*organizational learning* as the overarching aim of such horizontal benchmarking activities' (Askim *et al.*, 2007, p. 300).

They conclude that municipalities in this horizontal voluntary project do obtain learning from benchmarking, but care must be taken when organizational learning is conceptualized and assessed, and should incorporate issues such as aiding agenda setting, decision-making, as well as changes. Additionally, learning is dependent on how the networks have been formed and shaped and under what circumstances municipalities have involved themselves. Factors as network, administrative characteristics and management and political participation are found to influence learning outcomes (Askim *et al.*, 2007, p. 317).

Saunders *et al*., 2007

Saunders *et al.* (2007) on the other hand studied a network of seven organizations coming from different private and public sectors to learn and share their experience regarding strategy deployment practices. The article describes how managers from these diverse organizations worked as a team on a benchmarking project arranged and facilitated by an organization, namely the New Zealand Benchmarking Club (NZBC) where they all were members. The networking members benchmarked both their own and other networking participants' practices, exemplifying the network benchmarking approach. The case study was conducted to determine current practices and to identify the leading practice tools used by the network members (Saunders *et al.*, 2007, p. 615).

The article concludes first of all, to have demonstrated a practical example of multiple benchmarking methods in action, and particularly network benchmarking (cf. Kyrö, 2003). Second, by studying organizations that are involved in improvement activities they were able to demonstrate benchmarking of strategy deployment. Lastly, the case revealed many common issues in deploying a new strategic initiative, which could assist other organizations to effectively implement their strategic initiatives.

Knutsson *et al*., 2012

Knutsson *et al*. (2012) describe municipal benchmarking networks and analyze whether they lead to improvement in practice. The point of departure is that benchmarking within a networking environment is a quite recent phenomenon, and a lack of critical analysis of the practice and implications of benchmarking is identified, particularly referring to the recent study by Askim *et al*. (2007). They discuss benchmarking in terms of 'compulsory' or 'voluntary', where they argue that even though participation in the Swedish National Benchmarking Project is

voluntary, it has put considerable institutional pressure on the invited municipalities, forcing them to participate to gain legitimacy.

They conclude that proactive benchmarking through participation in a benchmarking network may be one way to deal with institutional pressure from external stakeholders. Although such a response does not necessarily mean that new practice is integrated into managerial and operational processes, as decoupling may occur (Meyer & Rowan, 1977). Here Knutsson *et al*. (2012) refer particularly to Oliver (1991) and to van Helden and Tillema (2005) regarding response patterns to institutional pressures. The study of Knutsson *et al*. (2012) however shows that poor performers often blamed their own performance on exogenous factors or methodological flaws, and some excellent actors used the results from benchmarking to reduce their performance (Knutsson *et al*., 2012, p. 120), similar to the threshold effect (e.g. Bevan & Hood, 2006, p. 516).

Section summary

According to this review of literature on benchmarking in networks there has particularly been some taking offset in Kyrö (2003) where learning is central. Vertical benchmarking is regarded as the case when principals monitor the activities of agents, and horizontal benchmarking is when organizations voluntarily engage independently or with others in systematic search activities, having organizational learning as the overarching aim.

When performing horizontal voluntary benchmarking projects within a municipal network care must be taken when organizational learning is conceptualized and assessed, and should incorporate issues such as aiding agenda setting, decision-making, as well as changes. On the other hand it is questioned whether participation in a municipal benchmarking network is voluntary at all, as institutional pressures is applied through the invitation to participate. The outcome of such benchmarking shows that poor performers often blame their own performance on exogenous factors or methodological flaws, and some excellent actors use the results to reduce their performance.

5. DIFFERENT CHALLENGES OF BENCHMARKING

As can be seen above benchmarking may be used for a variety of purposes, in a variety of constellations, and in a variety of contexts. To make it even more complex, benchmarking is sometimes called something else, which contributes to veil its use. With the ambition to use benchmarking to serve different purposes simultaneously, this could instigate conflicts. And lastly, if having *learning* at the

core of benchmarking this challenge should also be dealt with. These three challenges are discussed below, to further the arguments from the last section.

The concept of 'benchmarking' has gained worldwide popularity within many sectors such as, for example, local government (e.g. Knutsson *et al*., 2012; Ammons & Rivenbark, 2008; Bowerman *et al*., 2001) and various parts of the utility sector (e.g. Jamasb & Pollitt, 2007; Dassler *et al*., 2006; Vinnari, 2006; Marques, 2006; Lin, 2005; Jamasb *et al.,* 2004). Here benchmarking is used according to the original intention as a horizontal benchmarking activity for organizational learning, (Askim *et al.,* 2007), and the word 'benchmarking' itself is easily recognized.

But at other occasions 'benchmarking' is called something else, which could be a source of confusion. Examples here are RPE or 'relative performance evaluation' (e.g. van Helden & Tillema, 2005; Johansson & Siverbo, 2009), 'performance evaluation' (e.g. Narayanan & Devila, 1998; Nuti *et al*., 2013), or as a 'management technique and improvement initiative' (Neely *et al.*, 2007, p. 150). When authorities use 'benchmarking' for regulation purposes it is sometimes called 'yardstick competition' which by Schleifer (1985) is promoted to minimize welfare losses involved with cost-of-service regulation.

Additionally, the uses of the different labels on benchmarking are not clearly defined. For example Dopuch and Gupta (1997, p. 142) claims 'the term 'benchmarking' is frequently used in practice to describe current RPE-motivated studies', whereas Johansson and Siverbo (2009, p. 197) claims RPE or 'relative performance evaluation' is *not* the equivalent of 'benchmarking'. According to them a relative performance evaluation is just a comparison, as opposed to benchmarking, since in benchmarking a process evaluation follows the performance evaluation. In other words: it depends on how the term 'benchmarking' is defined and used, and sometimes the uses conflict.

This issue of benchmarking used for different purposes and in different settings may also instigate conflicts in a public sector environment, if the purposes conflict, and for example Van Dooren *et al*. (2010, p. 100) lists three different and opposing purposes of using performance information. First of all, benchmarking can be used as a tool to collect performance information in order to find out what works and why (not), where the main purpose here is future-oriented as learning using the performance information for process evaluation and outcome evaluation. Secondly, the performance information can be used to identify and sanction institutions or public servants, whereas the system have an orientation towards steering and control, and concerned with the present rather than the future or past performance. Thirdly, the performance information can be used to give account, which mainly is about explaining past performance, and hence not so much with change or control, as survival.

Kyrö (2006) on the other hand concludes that the aspects of evaluation and improvement by learning from others are embedded in the different purposes of benchmarking (Kyrö, 2006, p. 94). Here the public sector is interesting, as the basic nature of public services is not to compete with each other. If one organization succeeds in providing excellent solutions, these are then available for others as well, and the focus is, therefore, more on cooperation than on competition (Kyrö, 2006, p. 95). This is also the focus of Barretta and Busco (2011) in their introduction to a special issue in the journal Management Accounting Research, with the title: 'Technologies of government in public sector's networks: In search of cooperation through management control innovations'. However, these attempts to shed light on inter-organizational relations all consider situations where partnerships emerge out of regulatory interventions established by government mandate (Barretta & Busco, 2011, p. 213).

Austin and Larkey (2007) is another example assuming 'to measure' being at the core of benchmarking, dividing measurement into two categories, namely 'motivational measurement' and 'informational measurement'. The former is concerned with the explicit intention to affect the people who are being measured, in an attempt to control activity that, it is assumed, will not be consistent with objectives in the absence of the measurement. The latter is concerned with providing insight to support organizational learning for better short-term management and long-term improvement of organizational processes (Austin & Larkey, 2007, p. 297). At the core of measuring is thus the ambition to improve (Behn, 2003), which in a benchmark context is closely related to organizational learning through best practice and process comparisons (Anand & Kodali, 2008).

Both Kaplan and Norton (1992) and Simons (1995) argue that certain management control systems should be used only to exchange information relevant to strategy formulation and not to evaluate performance. This is because some measures may be challenging to enumerate and check, and thereby susceptible to misinterpretation and manipulation. Some authors therefore recommend using multiple control systems rather than using the same accounting information for multiple purposes, but in their study Narayanan and Davila (1998) show that setting up multiple control systems, does not solve the tension between performance evaluation and belief-revision uses of accounting information (Narayanan & Devila, 1998, p. 258). And additionally, the simultaneous use of control mechanisms serving multiple purposes makes it difficult, if not impossible, to isolate the effect of any specific means of control (Otley, 1980, p. 423).

Learning is seen as one of the cornerstones of benchmarking, if not *the* cornerstone and is well described in the literature (e.g. Cox *et al*., 1997; Kyrö, 2003; Anand & Kodali, 2008), but how, or even if, learning may occur in a regulatory setting is not well developed and described. Although, if participation in public sector benchmarking in general is seen as compulsory in order to gain legitimacy, then

there are some such as, for example, Askim *et al.* (2007) and Knutsson *et al.* (2012), both studying municipal benchmarking networks concluding that organizational learning from attending such networks are ambiguous as shown in a previous section of this chapter.

Within the public sector, 'a major difficulty with benchmarking is that it can quickly degenerate into a process whereby league tables and rankings drive out the learning effects. For this reason, paying explicit attention to learning mechanisms and structures within benchmarking design is of critical importance' (Papaioannou *et al.,* 2006, p. 96). They particularly point to how 'top-down' and 'bottom-up' approaches instigate different outcomes, where the top-down approach implies some outside body or agency, which can set performance targets, applies benchmarking in a compulsory way. The bottom-up approach, on the contrary, entails that organizations do the benchmarking themselves and find other organizations to compare with in a voluntary way, suggesting that interactive learning increases in this approach (Papaioannou *et al*., 2006, p. 101) such as, for example, in self-regulation.

When organizations are exposed to regulatory pressures, it should according to DiMaggio & Powell (1983) lead to convergence, but could also produce divergence (D'Aunno *et al.,* 2000) when firms respond differently. This is also the focus of Oliver (1991) as to how strategic responses of organizations to institutional pressures differ. According to Sine *et al*. (2005), learning could also be learning from the experience of other firms, and on a more macro perspective whole industries can learn from other industries (Miner *et al*., 2003). Thus, learning from another population in response to regulation can also lead to change in the institutional environment. Variations in actor responses to the same institutional environment can produce greater heterogeneous, rather than homogenous, outcomes (Oliver, 1991), which is seen as a very important area of future research (Haunschild & Chandler, 2008).

6. CONCLUDING COMMENTS AND AREAS FOR FURTHER ELABORATION IN THIS THESIS

Splitting up the literature review in three main sections have made it possible to focus on what is essential in this thesis, namely to set the scene for the articles (especially in chapters four and five), but also to make it clearer to the reader how the dissertation contributes to the literature. Focus is therefore especially, on which dilemmas benchmark raises and how it might be a source of learning.

The overall conclusion from this chapter on benchmarking there is an extensive use of metaphors to grasp and communicate what benchmarking is, or could be. In fact, they are quite analogous to configurations used when describing structure and power (cf. e.g. Mintzberg, 1989). This could certainly be because we all read the same books (and use the same metaphors), but could also be an expression of it really *is* about structure and power. A pertinent example is the use of 'vertical' vs. 'horizontal', which constitutes different modes of hierarchical pressure.

Another example is *who* carries out the benchmarking. Here there are broadly two approaches to benchmarking, namely the 'bottom-up' and 'top-down' (cf. e.g. Arrowsmith *et al.*, 2004, p. 313). The bottom-up approach entails that organizations do the benchmarking themselves as a process of networking and experience sharing (Arrowsmith *et al.,* 2004). The top-down approach implies that benchmarking can be applied by some outside body or agency, or by large (often multinational) companies, which may be focused internally as well as externally. The top-down is applied as a means of control and not just learning.

Applying the inherent meaning behind these metaphors is supposedly necessary to fully grasp the 'language' within benchmarking as well, although care should be taken not to commit metaphorical drifting (Alvesson, 1993). An example of this is when Cox *et al.* (1997, p. 286) describe 'the current practice of *talking* collaboration and *walking* competition'. Having this in mind, the general understanding is, when we depict a benchmarking situation as 'horizontal', the aim is to describe a setting, which is regarded as responsive and collaborative, with the aim of learning. Unfortunately, the other extreme it is not that simple. When we depict a benchmarking situation as 'vertical', the aim is to describe a setting, which is implying hierarchical pressure. This could come from the inside of the organization (as in top-down), or from the outside as compulsory benchmarking initiated by some outside body or agency. Evidently, many of the different ways of categorizing benchmarking are complementary and/or overlapping.

There are dilemmas within benchmarking as for example pointed to by Bowerman *et al*. (2002, p. 434), and especially when applying benchmarking within the public sector. Since the introduction of New Public Management (Hood, 1991, 1995), benchmarking has emerged as a tool to regulate organizations not being exposed to traditional market mechanisms (e.g. Pollitt, 1995). But as the public sector aspires to openness and accountability, what happens 'where the results of the benchmarking exercises may be published and where benchmarking may be conducted at the behest of an external agency or higher level of government' (Bowerman *et al*., 2002, p. 435)?

Evidently the literature is concerning many aspect of benchmarking, but the literature does not seem to have investigated the district-heating sector by employing empirical studies in particular. This will be sought remedied in this

thesis chapter 4 (article 2) and chapter 5 (article 3). The thesis will also aspire to reply to Bowerman *et al*. (2002, p. 435) to study the consequences of using benchmarking for simultaneous learning and regulation. This will be sought remedied in this thesis chapter 4 (article 2) and chapter 5 (article 3). The framework of Cox *et al.* (1997, p. 291) is indeed inspiring, but we will expand it to take into account regulatory aspects as well. This will be done in this thesis chapter 4 (article 2). And lastly, the execution of a voluntary and horizontal benchmarking process in an existing networking will be described in chapter 5 (article 3).

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CHAPTER 3: ARTICLE 1

THE EMERGENCE, INSTITUTIONALIZATION AND STRUCTURING OF AN ORGANIZATIONAL FIELD: AN ANALYSIS OF A SECTOR'S HISTORY.

ABSTRACT

This study sought to explain how movement-like behavior by common citizens develops into formal units and how these are challenged and destabilized by emergent processes. Based on a qualitative study of the Danish district-heating sector through analyzing the 50th anniversary book of the Danish District Heating Association, results revealed how a particular network of individuals and organizations with different institutional logic were able to negotiate and agree upon a common way of organizing diverging interests towards constitutive activities originating from governance structures. The study shows what could be called a 'Coup d'état á la Denmark', where political interests take advantage of movement results by taking infrastructure and member commitment as hostage in the name of energy security and environmental issues, where the end result is a highly regulated and institutionalized sector. The study contributes new insights into theories of institutional development, movements and authority behavior.

Key words: institutional theory, organizational theory, social movement theory, district heating, Denmark

1. INTRODUCTION

Shortage being the mother of entrepreneurial creativity could be the explanation of why Denmark has become almost synonymous with 'district heating' and 'wind power' in many parts of the world. The country of Denmark, a geographically small piece of land in Northern Europe has evidently limited natural domestic resources compared to other neighbors like Norway or Sweden, and when it comes to energy

resources this is particularly true. Whereas Norway and Sweden have vast hydropower resources Denmark has none. This entrepreneurial spirit has amongst others resulted in combined heat and power plants (CHP) contributed in 2010 with more than 50% of all electricity and 80% of consumed district heat in Denmark (Lund *et al*., 2010; Münster *et al*., 2012). A side effect is the Danish export of district heating related know-how and equipment amounting to more than 5 billion DKK in 2013 and expected to have tripled in 2020 (COWI, 2014).

This success has attracted many researchers attention such as, for example, Mortensen and Overgaard (1992) investigating the large penetration of district heating in Denmark compared to other countries, but recent articles (e.g. Lund *et al*., 2010; Münster *et al.,* 2012) concerns more the *future* role of district heating and not its evolution. Someone must have initiated district-heating networks like all other kinds of infrastructure sometime, somehow and somewhere. These many separate networks, which together make an overall infrastructure, compose district heating. A district-heating infrastructure is therefore, in principle, geographically scattered, heterogeneous in many respects and has generally no common ownership. This line of thoughts is leading to the research questions:

- How does the framework of McAdam and Scott (2005) contribute to analyze the history and development of the Danish district-heating sector?
- How may the interaction between movement mobilization and institutional processes in the organizational field of Danish district heating be illustrated?
- How does one explain the significant penetration of district heating in Denmark?

The primary object of this qualitative study is thus to describe the evolution of an *organizational field* (DiMaggio & Powell, 1983, p. 335) which later became known as the Danish district-heating sector. The focus is particularly the composition of the field in terms of actors and how they existed in the wider social environment seen through the lens of Social Movement theory and Institutional theory. This shall also contribute to what Scott claims to be a neglected area of study namely 'the processes at work in the transitional period during which successful movement objectives are "handed off" to legislatures and the public agencies for follow-through and implementation' (2008, p. 195).

Examples of scholarly exchange between social movements and organizational scholars are not challenging to find (cf. e.g. Davis & Anderson, 2008, p. 373), and are even the main issues in the work of Schneiberg and Lounsbury (2008). Here they argue for when this exchange is necessary from the institutionalist point of view, and how it is used to revise it. McAdam and Scott introduced a common framework in 2005, but examples of this framework are indeed challenging to find, save for the work of Den Hond and De Bakker (2007) where they operationalize parts of the framework. The study will remedy this by mobilizing the conceptual

system and the underlying theory as described in the work of McAdam and Scott (2005) to analyze the book *Dansk Fjernvarme i 50 år: 1957-2007* (the 50th anniversary book of Danish District Heating Association), published in commemoration of the association's 50th anniversary. The framework of McAdam and Scott (2005) will be applied to analyze the content of the mentioned book to go beyond the original text in the mentioned book to add another interpretation.

According to Schneiberg and Lounsbury (2008), new systems are often not created in one fell swoop, but rather through waves of diffusion or comprehensive settlements. They refer amongst others to Meyer and Rowan (1977, p. 345) where they state 'the building blocks for organizations come to be littered around the social landscape; it takes only a little entrepreneurial energy to assemble them into a structure'. In this regard Schneiberg and Lounsbury (2008, p. 666) calls for research to investigate the neo-institutional aspects of 'where institutions such as fields, practices or paths come from and how they are forged or elaborated over time'. The history of Danish district heating is such an example and the study shall contribute also in this respect by applying McAdam and Scott's (2005) framework.

The paper is organized as follows: In the following section, the theoretical framework for studying change and stability is outlined as a combination of social movement theory and institutional theory where the main concepts are outlined. Thereafter, the employed research design and methodology are presented as well as the empirical source. In section four, the empirical material is analyzed according to the presented framework. In section five, the overall findings are discussed and concluded as well as a presentation of theoretical perspectives and suggestions for future research.

2. THEORETICAL FRAMEWORK FOR STUDYING SOCIAL CHANGE AND STABILITY

According to Weber and King (2015) there is a burgeoning literature on organizational theory and social movement dynamics and especially after the publication of an edited volume that re-united the 'twins separated at birth' (Davis *et al*., 2008, p. 390). The interest among academic researchers in this topic can also be seen from the special issue of *Administrative Science Quarterly* (cf. Davis *et al*., 2008), as well as in *Organization Studies* (cf. De Bakker *et al.*, 2013) and in *Journal of Management Studies* (cf. Birkinshaw *et al*., 2014) on social movement theory for management research in particular.

On a continuum of types of social organization social movement and formal organizations are found at opposing ends of the scale. In its purest form social movement as collective action is regarded as irrational, spontaneous, emotional and emergent leading to ephemeral, deviant and potentially destructive behavior even if the intended outcome is to transform society to the better (Weber & King, 2015, p. 488). This became particularly the case when social movements began to take a leading role in forming global politics on peace, race, gender and environmental issues. As a consequence the view of social movements as orthodox Marxist class conflict became questioned when middle class carried out conflicts on a cultural rather than material basis in the 1970s and onwards (Weber & King, 2015, p. 491).

Whereas organizational theory is founded on theories of rational bureaucracy the theories of social movement originates from crowd behavior. Important to notice is the evolution of the inherent meaning of the two twins for organizational scholars as this evidently also interrelates the public opinion. One could for example suspect 'collective behavior' in social movement vocabulary to sound much like practical Marxism not only at the time when McCarthyism was at high peak in the North American sphere, but also today. This is for example the case when district heating is referred to as a 'collective' system understood by many in the Western societies to the detriment of the individual.

The similitude between social movements and institutional entrepreneurship is also apparent, as entrepreneurs are typically engaging in convincing others to share their view, the formation of new industries and forms resemble social movements (Fligstein, 2001), and both need effective recruitment networks to achieve critical mass (Davis & Anderson, 2008, p. 373). For recruitment to be successful it requires active engagement and advocacy (Davis & Anderson, 2008, p. 375). According to Rao *et al*. (2003, p. 796) individual actors form networks and coalitions to act as 'important motors of institution-building, deinstitutionalization, and reinstitutionalization in organizational fields' that provided a bridge between social movement theory and institutional theory, and both theories draw on common images and mechanisms for organizational change (Davis *et al.,* 2005).

Davis and Anderson (2008) not only advocate the complementary insights offered by organizational institutionalism and social movement theory to address collective responsibility (Davis & Anderson, 2008, p. 371), but also as complementary ways of analyzing firms (Davis & Anderson, 2008, p. 378). For example when organizations adopt practices and structures because they are regarded as appropriate and legitimate within their organizational field, social movements might entail expanding field level definitions of the appropriate (Davis & Anderson, 2008, p. 372).

Legal-rational bureaucracies on the other hand were early on viewed as stabilizing arrangements for social order, but according to Weber and King (2015, p. 492)

'organizational theorists became increasingly interested in dynamics occurring outside the organization' mainly caused by the emerging fields of population ecology (Hannan & Freeman, 1977), resource dependence theory (Pfeffer & Salancik, 1978) and neo-institutional theory (DiMaggio & Powell, 1983; Meyer & Rowan, 1977) during the period 1970 to 1990. Social movement theory thus applies a supplementary view to understand organizations' relations with their external environments where the actions and effectiveness of specific actors are embedded in a broader network of activity.

It is important to note that these two 'twins' have developed striking similarities, which has to do with how organization theorists and social movement theorists study social change and hence, if fully appreciated and exploited, could provide the basis for mutually beneficial cross-fertilization (e.g. Campbell, 2005). To take advantage of the complementary strengths of both organizational studies and social movement studies, McAdam and Scott (2005) merged the two 'twins' to study social change in general, having applied them to either an organization or to a social movement setting.

The merger between the two 'twins', as a new synthetic framework, is based on two predecessors, where the first is a framework based on *organization theory* (Scott *et al*., 2000), to guide comparative and longitudinal studies of institutional change in the sector of US health care systems. This framework is based on organizational studies encompassing characteristics as structure, established organizations, organization field, institutionalized authority and localized regimes or sectors, but lacks specifically the social process that is of special interest in this study. The other predecessor is a framework based on *social movement theory* (McAdam *et al.*, 1996) and is more occupied with how mobilization and opportunities introduce complementary characteristics like process, emergent organizations, movement centricity, transgressive contention and societal regimes (McAdam & Scott, 2005, p. 9).

Now I will return to what Scott claims to be a neglected area of study namely 'the processes at work in the transitional period during which successful movement objectives are "handed off" to legislatures and the public agencies for follow-through and implementation' (2008, p. 195). Assuming the evolution of the Danish district heating has emerged from being a social movement to becoming an institutionalized sector, Scott's claim could hence be illustrated as in Figure 1 below.

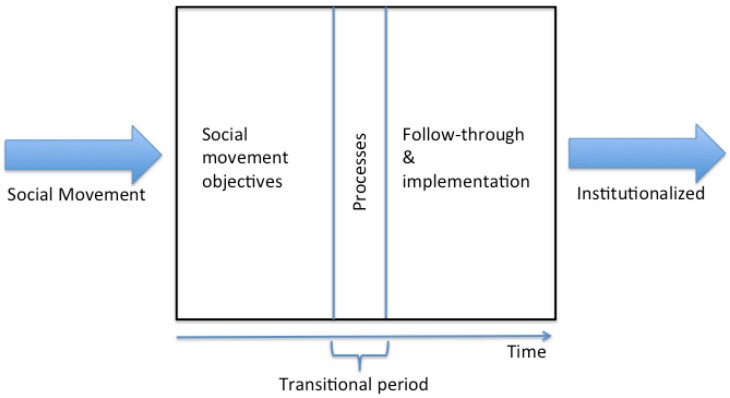

Figure 1 Illustration of Scott's (2008, p. 195) claim.

By reading Figure 1 from left to right, it illustrates how a social movement, after a period of time, might end up being institutionalized. This transition will not happen instantly because the social movement objectives originated in the social movement must be handed over to legislature and public agencies for follow-through and implementation, and these processes will obviously take some time. The framework below is intended to help understand what is happening in this transitional period, by also looking at predecessors and outcome.

2.1 Analytical framework

Using a combination of social movement theory and institutional theory is not new within the social sciences as stated in this article's introduction. What is relatively new, however, is the attempt to make a synthesized framework combining the two. The analytical framework presented here consists of a synergetic combination of the two independently developed frameworks shown above, where McAdam *et al*. (1996) developed one for studying social movements and Scott *et al*. (2000) developed one for studying institutional change. In their combined analytical framework, McAdam and Scott claim their aim is to 'begin to craft a broader and stronger foundation for describing and explaining organizationally mediated social change processes in modern society' (2005 p. 14), as will be explained below starting with the contribution from institutional theory.

In McAdam and Scott (2005) the *organizational field* is the primary unit of analysis. Secondly the *time period* is of interest and the *actors* of the field are identified and classified according to dominants, challengers and governance units. Thirdly, the *environment* of the field is identified to find external actors and external governance units. Then the *institutional logics* guiding social actors and their behavior are identified including values, norms, and beliefs regarding means-ends relations. Logics may be *primary* - the ideas guiding and legitimizing the

actions of dominant actors, or logics may be *secondary* – the ideas associated with emerging or suppressed actors. The extent of alignment among these frames signifies possible sources of support or opposition.

According to McAdam and Scott the above four concepts cannot explain the *origins* of periods of significant conflict and change, and more dynamic and process-oriented concepts are needed. These concepts are borrowed from social movement studies (2005, p. 18), and represented by the following three parts making the framework of seven analytic conventions complete.

The fifth convention is to find in the *origins* of a period according to dynamic, process-oriented concepts taking the following two aspects into consideration: a) under *ordinary circumstances* fields tend towards stability as a fragile "institutional settlement", in the form of an agreement negotiated primarily by the dominant actors (and their internal and external allies) to preserve status quo that generally serve their interests, and b) where change is initiated with a *destabilizing event* or *process* that often has its origins in destabilized market pressures and/or ecological dynamics.

Convention six acknowledge that generally it is not the destabilizing events/processes themselves that set periods of field contention and change in motion, but change starts as a process of *reactive mobilization* defined by the following set of three highly contingent mobilizing mechanisms mediating between pressure for change and a significant episode of field conflict: a) A*ttribution of threat or opportunity*: do field actors interpret potentially destabilizing events/processes as representing new threats or opportunities relative of their interests? b) *Social appropriation*: are the authors of the new (threatening/ opportunistic) view able to establish it as the dominant institutional logic of the group in question? c) *New actors and innovative action:* do these attributions lead to the emergence of new actors and/or innovative actions with the potential to destabilize the field?

Finally, if the answer to all three sub-questions mentioned above turns out to be a "yes" we can expect field dominants and challengers to act and interact in new ways resulting in a significant *shift in the strategic alignment* that had previously structured and stabilized the field, which is likely to lead to a new *institutional settlement*.

The above framework shall guide the analysis of each time interval of the anniversary book to describe periods of significant conflict and change to achieve a coherent picture. It is worth to remember the first four of the seven conventions are regarded as basic tools to describe periods of significant conflict and change, whereas the last three seeks to explain the origins of such periods. It is also important to recognize the framework as a flexible tool to be tailored to each case

as illustrated through the two cases of McAdam and Scott (2005, pp. 19-38) and not to be used as a prêt-a-porter solution.

3. RESEARCH DESIGN AND METHODOLOGY

As mentioned earlier the main empirical source of data is the Danish District Heating Association's 50th anniversary book covering the period from 1870s to 2007, and the timeline of this study is using the same time intervals as in this book. The qualitative analysis (e.g. Ahrens & Chapman, 2006, p. 821), where the applied method is to analyze a text, will be dealt with along a timeline and evidently in a retrospective manner.

The empirical source is a book made in connection with the 50th anniversary of the Danish District Heating Association. Certainly the book is made to suit the interest of the association, as containing 'constructed truths' not only from the sector, but also contemporary history as well as why and how it became a sector. Taken a little further, the anniversary book could also be seen as way of reminding stakeholders as members, politicians and the public at large that the sector has its ancestors in the Danish co-operative movements, and as a means to reconstruct not only the relevance of the association but also of the sector itself.

The empirical 'data' from the anniversary book is not regarded as value-free as it is an association's anniversary book, although the content consists of publicly known data collected by third-party archivists. Whether the data is valid or reliable according to the objectivist or functionalist paradigmatic way of reasoning is not regarded as relevant in that respect, as the analysis is performed through carefully reading and interpreting the text, back and forth, to categorize incidents and descriptions in the context of the applied framework. In addition, the variables we use, such as, for example, various measures of size, numbers and types of organizations, ownership status, are reasonably straightforward, non-sensitive and easily reported.

The research approach used in this interpretive study is to map these mentioned important incidents, trajectories, structures and participants and categorizing them according to the framework of McAdam and Scott (2005). In other words, we are not performing a text analysis for drawing statistical inferences from the text, but interpreting the text itself. Evidently the authors of the anniversary book could have included other incidents, persons or organizations or left out some of the included ones. And likewise, when applying an interpretive approach it is obviously subjectively informed, and others might arrive at different conclusions. Although, a

kind of objectivity inherent in the framework itself, and the use of it, could be expected, and the anniversary book is supposed to contain relatively relevant data, so results from differing researchers is anticipated to reveal similar, although not identical conclusions or at least serve as a common ground for fruitful discussions.

The analytical framework we have applied to enable the analysis of the anniversary book is presented in the work of McAdam and Scott (2005) being the result of combining two bodies of work, namely 'social movement theory' and 'institutional theory'. The analytical framework calls, on the one hand, attention to the dynamics and process-oriented resource mobilization in emergent organizations, in the form of social movements. On the other hand, the same analytical framework emphasizes how these are later sedimented in the structure of established organizations in an organizational field with institutionalized authority (McAdam & Scott, 2005, p. 9).

3.1 The 50th anniversary book of Danish District Heating Association

In the years from 2003 to 2006 the Danish District Heating Association conducted a study of its history, which they presented in the book *Dansk Fjernvarme i 50 år: 1957-2007* in connection with the association's 50th anniversary. The focus of interest, as expressed in the preface of the book, was to give a picture of the development district heating has gone through during these years as well as the impact on the Danish welfare society. Even though the title indicates the resemblance of the last 50 years only, the anniversary book is covering district heating since its appearance in 1870s.

Over its 181 pages the book is divided into six chapters covering six eras, where the authors have named the eras explicitly. The first chapter is covering the years from 1870s to 1950s as 'The Era of Co-operation' presenting district heating on a general basis in the Northern hemisphere, but Denmark in particular. Chapter two concerns particularly the years 1957 – 1964 as 'The Era of Association'. An era were the predecessor to the present Danish District Heating Association was founded and also an era of break-through of district heating in Denmark resulting in a great growth in number of plants, which is continued into chapter three covering the years 1965 – 1973 as 'The Era of Expansion'. Chapter four introduces the first oil crisis and following authority intervention and describes the period from 1973 – 1979 as 'The Era of Oil Crisis and Energy Politics'.

Until 1979 there was no appointed governmental body for the growing sector except for safety reasons. But from now on, the sector came into position for lessening the dependence on imported oil for space heating in particular. This came as a Heat Supply Act of 1979 and heavy taxation initially for regulatory purposes and chapter five describes the period from 1979 until 1990s as 'The Era of Law and Order'. The chapter incorporates also the second energy crisis, and the incorporation of natural gas into the district-heating sector transforming a major

part from heat-only to combined heat and power (CHP). The last chapter describes the period from 1990s to 2005 as 'The Era of Great Change' where environmental issues take the front seat with the authorities at the wheel.

The anniversary book is authored by the archivists Andreas Skov and Jens Åge S. Petersen at Odense State Archives. The editorial board is composed of two previous managers of the Danish District Heating Association H. C. Mortensen and J. Aamand as well as L. Chr. Lilleholt, Member of Parliament. The authors have conducted interviews with 9 persons including managers and board members from the Danish District Heating Association as well as managers from associated member companies. From the archive of Danish District Heating Association the authors have used minutes from many general assemblies, board meetings, as well as other relevant meetings from the period of 1958 to 1994. Additional literature has been printed material from Danish Statistics (1955 – 2000), political agreements, issues of the association's journal (1964-2005), annual reports (1988 – 2005), and many other relevant literature as well as newspapers. All sources, literature and notes are listed in the anniversary book pages 182 – 185.

4. ANALYSING THE HISTORY OF THE DANISH DISTRICT-HEATING SECTOR

When particular words are set in *italic* below in the analysis part, it is to indicate correspondence with the analytic framework. The analysis is performed according to the chapters in the anniversary book as follows:

4.1 Origins: Era of Co-operation: From 1870s to 1957

The heating of the Zoological museum and surrounding buildings in Copenhagen in 1869 can be regarded as the first district heating in the world (Dansk Fjernvarme[3], 2007, p. 16). However, often the initiative to burn garbage in a local incinerator in Copenhagen due to shortage of physical space in a crowded municipal area called Frederiksberg in 1903 is seen as the first district heating system in Denmark. Crowdedness together with the fear for cholera results in an idea of distributing the heat from the incinerator plant to nearby buildings through steam pipes for space

[3] *In this section Dansk Fjernvarme (2007) is the dominant source of information, and whenever referenced to, the name of the author is omitted and showing just the page number.*

heating purpose but additionally, the plant also produces electricity and in fact making it a combined heat and power plant (CHP).

The very initiative come from the municipality to take care of externalities as described above being a not-for-profit project even though one could suspect the municipality to see savings in the supply of heat to public buildings as workhouse, hospitals, public bath and schools in the proximity which otherwise should have had conventional heating from coal or firewood. In other words no commercial interests is involved except from suppliers and craftsmen in the erection and maintenance of the plant and the distribution network, even though the municipality has a source of income from the sale of electricity from the plant but still the use of the income is at the discretion of the community.

It is evident that an organizational field is containing diverging or conflicting interests and it is likely to believe that this is also the situation here as the municipal production of heat from the incinerator takes business away from *dominant actors* as suppliers of coal, firewood and even gas, as well as associated maintenance and renewals of stoves, ovens and fireplaces (p.15).

Regarding the production of electricity, this is already a public initiative producing electricity and selling it to its citizens and as such is not challenging direct competitors. Other *dominant actors* in the field could be characterized as suppliers of energy related to heating (such as, for example, the Danish association of gasworks) and related services and products. Additionally, there are *dominant actors* as the FKE (Foreningen af Købstadskommunale Elektricitetsværker) as well as DEF (Danske Elværkers forening).

The CHP plant described above represents the status quo in Denmark regarding district heating until the end of the 1920s when many municipalities were required to renew their outdated electricity plants as well as respond to the increased industrial and public demand for electricity. This represented a possibility for the municipal electricity plants to convert to CHP, having the production of electricity as a prime driver and hot water as a secondary or derived product serving as coolant medium for the electric generators and thus *challenging* the dominant actors mentioned above.

Inspired from the positive results from CHP in Germany many Danish cities gets their district heating system though in a very limited scale, as the limited capacity from the production of electricity at this point in time could only deliver hot water as space heating for relatively few houses. In other words the *threat* from the CHP is assumed to be relatively limited towards suppliers of coal, firewood and gas as well as associated systems at this early stage of development. This situation is status quo through the 1930s until the end of 1940s as a consequence of shortage of

resources as well as limited growth in the after-war period resulting in a national coverage of district heating to only 3-4% of total space heating demand (p.15).

From the 1950s the number of district heating plants grow, but many as pure heating plants, and not as CHPs. The renewal and up scaling of power plants in the 1950s results even in conversion from CHP to pure production of electricity, as there is no public guidelines or regulation influencing or prohibiting this. Nevertheless the period is not only characterized by growth in public services like hospitals, schools, nurseries and housing, but also by local politicians engaging for public involvement in establishing not only power plants, but also district heating for its citizens to ensure a stable supply of energy (p.21).

In parallel to the *challenging* public effort through politicians there is a unique establishing of small district heating plants localized in small communities scattered all over Denmark (p. 21) as local prominent persons takes *challenging* initiatives according to co-operative thinking from Danish farming, and transfers the idea to private households which is invited to be shareholders in limited companies organized as a co-operative company with limited responsibility (a.m.b.a. or in Danish: Andelsselskab med begrænset ansvar) owing the local district heating plant from where they are obliged to buy their space heating. These local initiatives is enabled not only by the co-operative way of organizing, but also by building contractors (p. 28) who campaigns heavily through commercial activities to influence locally to build new district heating plants (p. 29) and thereby *challenging* established dominant actors.

In this era there is no *governance* unit that exercises field-level power or authority. But as both officials and politicians exists in a wider political system it is likely to believe there are both officials and politicians as *non-governance actors* not as participants in the focal field, but in some manner influencing the course of action anyhow. It is also likely to believe *external governance* units taking care of electrical safety regarding production and distribution of electricity as well as the safe use of pressure vessels. This has a peripheral but important status of approval and at least not limiting nor restraining the diffusion of the district heating technology from safety reasons.

Primary logics are here those related to guiding and legitimizing actions of *dominant* actors such as suppliers of gas as well as those electricity works delivering hot water for space heating. Here the “old-establishment” or “status quo” is the rule as they are afraid of substitution effects from new technology as district heating takes away their business. This is not only the case for the dominant gas and electricity towards the emerging district heating, but also between gas *and* electricity, resulting in suppliers of gas are fighting on at least two fronts. *Secondary* logics on the other hand are here those associated with emerging or

suppressed actors such as local politicians and local prominent private persons advocating for district heating.

The electricity companies see district heating as an *opportunity* not only extending their business, but also on having their heated cooling water from their generators cooled down in households for money. The gas-suppliers on the other hand see the initiatives from the electricity companies and the emerging district heating systems as a *threat* (p. 15). At the same time local politicians and local prominent persons see the *opportunity* in keeping the money spend on the heating bill within the local community. From a technological point of view there is no hinders for the establishing of small district heating facilities (p. 27), and the construction companies takes the *opportunity* to build new district heating plants on a large scale (p. 29).

The erection of district heating facilities also bring employment in a period of high unemployment to unemployed unskilled laborer as well as the use of the district heating significantly reduces costs to space heating compared to individual heating of houses (p. 23). Additionally, the individual households see the district heating as a cleaner (no smoke or particles from individual chimeys or ash or dust from coal in living spaces) and more "user-friendly" (do not have to hump the coal or firewood) way of heating houses (p. 15), which also has an impact on the new logic.

In the same timespan the public become a *new actor* in the development of the Danish welfare society taking on the responsibility to ensure citizens a stable source of energy not only electricity but also space heating (p. 21). Construction companies also become a *new actor* actively marketing their services to spread district heating to new geographical areas (p. 29) and actively helping the new co-operative district heating companies to overcome legal and technical hinders, arranging member meetings, lobbyism towards municipal authorities to lend the co-operatives money for construction of co-operative district heating facilities (p. 29).

Even the Danish ministry of the interior becomes a *new actor* accepting the municipalities to guarantee loans for the construction of co-operative district heating facilities. Another new though distant *actor* is the establishing of Unichal in 1954 as an international union of producers and distributors of district heating (later renamed to Euroheat & Power) (p. 42), even though the Danish District Heating Association didn't became a member until 1961.

The above makes it reasonable to expect a significant *shift in the strategic alignment* that previously has structured and stabilized the field, opening up for a new *institutional settlement*. One obvious result is the formation of an association to serve the interests of the district heating companies, which took place in 1957. The initiative to form the association come originally from private electricity companies, but due to circumstances the association of publicly owned municipal

electricity companies (F.K.E. or Foreningen af Købstadskommunale Elektricitetsværker) establishes a committee in 1956 to carry the initiative through (p. 22).

4.2 Era of Association: 1957-1964

The *dominant* actors in this era are still the Danish association of gasworks and related services and products together with FKE (Foreningen af Købstadskommunale Elektricitetsværker) as well as DEF (Danske Elværkers forening) and the Danish association of gasworks (Danske Gasværkers Forening). These actors may all be characterized as for-profit as opposed to not-for-profit actors. As an example of *dominant* actor behavior the Danish association of gasworks (Danske Gasværkers Forening) initiates in the 1960 a campaign towards local Danish politicians to drop district heating at the advantage of gas (p. 15). In the same era the *challenging* actors are shifting from being local politicians and local prominent private persons to district heating companies but still representing not-for-profit thinking.

The formation of a union to unite all district heating companies in Denmark is not an easy task. For example the association of Danish electricity companies (DEF or Danske Elværkers Forening) cannot see why they shall involve themselves in matters outside electricity itself. As a *reactive mobilization* they even propagates towards the association of publicly owned municipal electricity companies (F.K.E.) *not* to establish a union especially for district heating (p. 23). Despite this the committee of FKE decides to carry on and comes up with a common purpose for the new union for district heating companies to be open for *all* district heating companies, private as well as publicly owned to become members in order to promote and solve questions of common interests regarding technical and economic issues.

To carry through the purpose of the new union a committee of seven shall be established by having two representatives coming from the larger area of Copenhagen, one representative from the so called 'primary works' or combined heat and power plants outside Copenhagen, three representatives from the association of publicly owned municipal electricity companies (F.K.E.) and finally one representative from the other district heating companies.

All known district-heating companies is contacted and on December 10th 1957 a total of 21 companies out of approximately 80 takes the *opportunity* to show up. Even though all can see the rationale behind the association, the smaller companies regards the Copenhagen companies as a threat, and the Copenhagen representatives themselves even regards the new association itself to be of limited interest. The result from this first attempt to establish a union ends up with only ten works, as the

Copenhagen companies together with the majority of the primary and smaller works choose to stay outside (p. 27).

In the newly formed union the majority come from the association of publicly owned municipal electricity companies (F.K.E.). Despite this slender start the new district heating association now being called 'The district heating Union' (F-S or Fjernvarme-Sammenslutningen) grow to 96 members in 1964 out of a total population of approximately 250 (p. 30) and becomes an *emergent* actor. It is also worth noticing the growth comes mainly from newly established district heating companies in the timespan 1962-1964.

As district heating is a 'new' business there is a lack of knowledge within areas like technical, economics as well as law, where especially the technical one is the focus of the district heating union which takes the *opportunity* to collect and distribute statistics especially regarding operational costs for their members. The smaller district heating companies had in 1957 formed their own association but the success of handling technical issues in the district heating union also convinces these smaller district heating companies to become members of F-S which they does later the same year (p. 31).

The committee of F-S is still to be composed by seven representatives but now with one representative from the so called 'primary works' or CHP plants outside Copenhagen, three representatives from the association of publicly owned municipal electricity companies (F.K.E.) and finally three representative from the other district heating companies. Additionally, the association becomes a collective member of the *external actor* the Danish boiler association (Dansk Kedelforening) to take advantage of their expertise but also for legitimizing purpose for the unions own members as a form of *governance unit* or classification society.

One main issue for the association to handle is concerning oil for combustion purpose being a major source of energy for district heating plants. Oil was sold on a free market where price is set according to the bargaining power of individual actors. But then, the members of the district heating union rallies for a common procurement of oil to enhance their bargaining power to attain lower prices. It seems the very talk of establishing a common procurement of oil make the prices fall on a national scale and the initiative is not carried out in practice (p. 34). Even though not outspoken this is a small triumph for the new association manifesting itself as an *emerging* actor not only in the eyes of its members, but also towards *dominant* players as the oil companies. The logic behind is that of supporting the *suppressed* small district heating companies resisting to pay too much for oil on behalf of their customers.

Despite the almost exploding interest and erection of new district heating plants in Denmark, intervention from the authorities is almost nonexistent, although, as a

consequence from a particular case where a municipality requested permission to guarantee a loan for a new plant, the authorities decides to employ an expert. Meetings took place at the premises of the *external actor* the Danish national building research station (Statens Byggeforskningsinstitut), and even if the results from the meetings is not fruitful from the district heating union point of view it somehow acknowledges them as an important player towards the authorities (p. 37).

In 1961 the Danish ministry of the interior (Indenrigsministeriet) prepares and distributes to all Danish local authorities and counties guidelines for how to handle district-heating projects, and establishes itself as a *governance actor* to exercise emerging field-level power or authority. The Danish district heating union is even consulted and put their mark on the final issue constituting its status as a new *dominant* actor.

In 1961 the first issue of the journal 'Fjernvarmen' (District heating) is distributed to members of the Danish district heating union as a test issue. After having had four test issues produced and distributed with success it is decided to make it permanent. The layout is humble but took on industrial advertisers as well as editorial and technical issues (p. 39) as well as statistical information on the rapid diffusion of district heating in Denmark.

The promotional effect from the journal among its members and actors in the society paves the way for the district heating union, taking on many new members. The authorities even show up officially on the yearly general assemblies. Another sign of interest from the authorities come in 1962 when they presents their way of viewing the various district heating companies and splitting them up into three groups: 1) Private, 2) Private, loan guaranteed by municipalities and 3) The municipal works.

The district heating union misses especially the larger municipal works as members, but eventually an incident in a major city convinces a particular municipality of the advantages of membership (p. 42) giving a strong signal to others of the importance of becoming a member of the union. All in all the number of members grows during the period and the union takes on more and more responsibility on behalf of its members. The secretarial work has up to now been handled for free by one of the initiators, but the increased workload pushes the union to charge its members a yearly fee.

In 1961 the Danish district heating union also become an associated member of the Unichal, an international association for district heating producer and distributors, whereas at the same time many members are individual members of the same association giving Denmark a strong position (p. 44). The membership in Unichar can amongst others be used to discuss environmental issues even if this issue is not high on the Danish authorities' agenda at the time. Practical experiences from

England and Germany such as, for example, impact on the height of district heating chimneys in Denmark to avoid problems with smoke genes.

4.3 Era of Expansion: 1965-1973

In the 1960s people are rallying for bigger, cheaper and better houses in the Danish suburbs. They love the idea of getting district heating, and thus saving away chimney, boiler and technical installation. The *dominant* players as gas coal companies are the losers and one may believe the overall winner shall be district heating, but individual oil-fired burners also has its fair share due to low oil prices. This is especially true in the countryside remote from the district heating networks (p. 48).

The district heating union, as a new *dominant actor,* has a lot through its fingers especially within communication with authorities, but also with technical issues of interest to its member companies. But the economic expansion of the early 1960s instigates not only a rapid expansion of district heating but also the authorities financial position towards the society as a whole calling for putting the brakes on (p. 48). This results in a 'financial crisis' also affecting the building of new district heating plants, and even if it loosens up after a short while, it is a kind of wake-up call not only for the citizens, but also for the district-heating sector.

Not only because of the financing problem but also due to saturation of the market the building of new district heating plants is reduced to only 10 during 1967-68. For comparison it was established 261 new plants in the years 1962-67. The second half of the 1960s is also a time for expanding existing plants. At the end of the 1960 the district heating in Denmark is made up by numerous very small and a few very large plants. District heating has established itself as a utility system similar to gas, water and electricity, but it is only gas which become a head on competitor fighting both nationally and locally towards district heating, but even if the attack is intense and long lasting the results are meager and district heating continues its expansion.

One issue is still of importance though, and that is the price of oil. Earlier the district heating union had rattled its sable towards the oil companies resulting in reduced prices, but now again prices are expanding and members of the district heating union wants a common reaction to reduce the oil prices (p. 61). The district heating union manages to enter into a deal with the municipal coal office (Kommunernes Kulkontor) to establish economy of scale and establish a central storage tank for district heating companies to buy their oil at a reasonable price and again the effect was the oil companies lowering their prices resulting overall a *triumph* for the district heating union.

The district heating union experiences increased workload, as many of its members are small companies without their own technical staff as opposed to the larger

works. This calls for further expansion of the secretariat from only being clerical manned to also include engineers (p. 63) again in line with the *institutional logics* of the dominant district-heating actors to preserve status quo to serve their interests. Additionally, the secretariat starts arranging regional meetings to enhance contact and knowledge sharing among its members (p. 64), and even moves into larger premises as a result of a steadily expansion of the secretariat.

But as the district heating union being a rather heterogeneous assembly of district heating companies questions concerning articles governing the composition of the board surfaced in 1970 resulting not only in a reallocation of power but also in an *innovative* twist. From now on the nine members of the union's board shall come from the member works, where four shall be salaried employees, two elected and three from the boards. All in all this shall ensure a balance between technical and political expertise. In 1973 the municipality of Copenhagen flags their interest to become a member if they gets a seat at the board, which they doesn't, but they become a member after all recognizing the *influence* of the district heating union.

In the time period the district heating union has also been guided by the *institutional logic* around environment and pollution where especially some of the districting companies has problems with their oil fired boilers. This brings attention to natural gas found in large quantities outside the coast of Denmark as a substitute to oil. Another route was to combine production of heat and power (CHP), which from an efficiency point of view is very appropriate. These two *opportunities* prepare the Danish energy sector for the upcoming oil crisis in 1973.

4.4 Era of Oil crisis and Energy politics: 1973-1979

The oil crisis in the 1970s is the critical point for the energy politics also in Denmark, as in the rest of the Western world. Until this crisis the energy politics in Denmark has been left to market forces although monitored by the Ministry of Trade, but when being hit by this highly *destabilizing event* the fear of being completely shut off oil-wise as well as the price of energy itself is paramount lead to speculations on how to find substitutes to OPEC controlled oil.

After considering and eventually turning down nuclear energy as a possible source of energy attention goes to oil exploration but is finally abandoned due to missing strikes and finally the natural gas already found in the North Sea come into focus (p. 77). The immediate response to this is concerning the whole value chain: who shall mine, produce and distribute it, how shall it be used, and how shall the profit be shared. Naturally the national state moves early into position as a controlling power in Danish energy politics deciding on the matter. Even though there are some interest from the district heating union the real suitors were only one, namely the electricity works fearing the state interests being too dominant.

The Ministry of Trade has the initiative and invites only the electricity works to the final negotiations regarding control and use of the natural gas resources, but at the end of day it is the national state itself taking control through a state owned company called Dansk Naturgas A/S and later DONG (Dansk Olie og Naturgas) being a new *challenging actor*. This event also has great *destabilizing* effect on the power relations in Danish energy supply, as the electricity companies have had a *dominant* role since the turn of the century. From this time the district heating union, from being an underdog towards the electricity companies the two become more on level – although both having to pay respect to the newcomer in the arena – the national state (p. 80).

The energy crisis has certainly consequences also for the citizens introducing a new *institutional logic*. They are told through heavy public advertising to save energy wherever they can, and they does by lowering the indoor temperature, using less hot water, reducing the airing, thermally isolating their houses, etc. This is seen as an *opportunity* for new *actors* being the industrial production of material and solutions for the thermal isolation of walls, ceilings, windows and doors. Moreover, of all, if the citizens does not obey and take the necessary precautions, they can risk physical control and inspection of their houses by representatives from the district heating companies having mandate to shut off the supply of heat in severe cases (p.81).

The energy-saving initiatives are not limited to the consumers of energy, as the district heating companies also takes their share such as, for example, through co-operation with industrial producers having waste-heat from their processes. As this energy is "free" it can reduce the oil bill, but it is only after the oil crisis it becomes economic viable. Even waste from industrial production can lead to savings such as, for example, waste from woodcraft industry may be used in incinerators at the district heating plant. Similarly the use of incinerators to burn garbage from public waste sites becomes a vital source of energy to the district heating plants.

All in all, this strengthens the already strong position in the public opinion of district heating being *the* most economic viable space heating system in Denmark; the only problem is to convince the government and the Danish Parliament (p. 83) towards the electricity companies. They produce electricity, using generators with an energy loss of approximately 65%, which leads to argumentation from the district heating union to reduce the loss to 20% by using the waste-heat from production of electricity for district heating. As the electricity companies have no interest in such an arrangement the district heating union calls for *state intervention* similar to other areas like water and sewage, telephone and postal services, resulting in a heating plan as described in the "Danish Energy Policy of 1976" (p. 84).

The state committee responsible for the development of the heating plan has to take into consideration *institutional logics* like fuel-saving, economic viability, balance of payments and the environment and subsequently identified the oil-fire burner in

detached houses as the culprit (p. 85). The committee presents several scenarios of which gas is preferred as well as using waste heat from production of electricity (p.86). As advisor to the Ministry of Trade in these matters, a *new actor* was appointed in 1976, namely the Danish Energy Agency, but also another *new actor* appeared on an 'Advisory board' on issues concerning energy having representatives, among others, from the district heating union. Now the Ministry of Trade controls all-important national matters concerning energy including nuclear energy and fossil energy issues in the North Sea (p. 89) *destabilizing* previous power constellations.

The district heating union takes the opportunity and rearranges its secretariat by appointing a manager, and decides to impact the energy political agenda, in addition to dispensing technical advice to its members, and to changing its name to The Danish District Heating Association (Danske Fjernvarmeværkers forening, or DFF). The association shall take an active part in the present dispute concerning the future of Danish energy - and heat supply. In this dispute, the use of natural gas from the North Sea plays a vital role as well as electricity companies abandoning oil in favor of coal and even campaigning for the intensified use of electricity for space heating. This last issue also met resistance in both the Danish government and in the Danish Parliament (p.92). Another result of the oil crisis, as well as environmental concern, has seen the introduction of sun and wind power on to the agenda both being regarded by the district heating as threatening and *challenging* systems.

Denmark first introduced the Heat Supply Act (Lov om varmeforsyning) in 1979, as well as a new Ministry of Energy. According to the new law, all municipalities shall develop heating plans for their jurisdictions to ensure the most optimal use of national resources for space heating and supply of hot water. Even though the *institutional logic* is obvious for the district heating association it is not obvious for officials, politicians or the other energy-centered organizations in Denmark (p. 94). All in all, the energy crisis led to a *shift in the strategic alignment* that has previously structured and stabilized the field leading to a new *institutional settlement*.

4.5 Era of Law and Order- the state is intervening: 1979-1990

Even though the second oil crisis materialized in 1979, the effects were not as severe as in 1973, as Danish society had already taken precautionary actions. But only one third of all households were given coverage, which was still not enough for the Danish Parliament. Consequently, they decided to implement the Heat Supply Act and Law on the supply of natural gas (Anlægslov om naturgasforsyning). This is in line with the district heating association, which considered these steps as necessary precautions because of the second oil crisis (p. 99).

Immediately after, the association contacts the *field* actor DONG and the *governance* units Local Government Denmark (Kommunernes Landsforening or KL) and Danish Energy Agency (Energistyrelsen) in order to have the initiatives. Especially Local Government Denmark has positioned themselves as very powerful actors not only because they are responsible for distribution and sale of the gas in Denmark, but also the local municipalities are responsible for the local planning of heating to households. And if that is not enough the local municipalities also has the mandate to instruct the households to connect and become a customer of either gas or district heating (p. 100).

In order to ensure a coordination of the local planning of heat a special task group is established having the manager of the district heating association among its members. The task group shall also criticize on the different guidelines coming from the Danish Energy Agency before they are put into force. In addition, the manager of the district heating association has a central role in connection with the special research program for district heating lead by the Ministry of Energy connected to the new Heat Supply Act to survey all projects in this regard (p. 103).

Another indication of district heating playing a more and more *dominant* role in the landscape is expressed by the fact that in addition, to the association's members numerous influential and important *actors* also shows up at the General assembly (Landsmøde) in 1981 amounting to 850 persons all in all (p. 107). These additional people come not only from the *field* itself as dominant governance actors, but also from the *environment* to the field as external actors and external governance units.

In 1982 the Danish District Heating Association celebrates its 25th anniversary counting 300 members and covering 90 % of all production of district heating in Denmark. The secretariat has expanded to 11 employees whereof seven are technicians to cover the escalating workload. Denmark can now present itself as having the greatest coverage of district heating on the planet as % of population. Denmark's position opens up doors abroad not only at the level of international co-operation, but also as an exporter of district heating related know-how and equipment amounting to 1,5 billion DKK in 1980, making Denmark a *dominant actor* (p. 118).

The district heating association sees natural gas a threat to district heating, instead of regarding the two as complementary. Nevertheless the national network of pipelines for gas distribution is officially opened in 1984. The politicians are in general very positive to the natural gas and as it is invested heavily in the gas distribution network it has also to be put into use (p.121). The equity of DONG shall at the same time be increased with 1 billion DKK and the natural gas project shall have 4.7 billion DKK in fresh capital (p. 122). To start with the government and the opposition agrees on forcing some of the existing electricity plants to convert to natural gas in addition to the existing coal fired, but that was not enough.

To finance the natural gas project she state has to increase its income in this regard and that is done through forcing district-heating companies to switch to natural gas. This is made possible by the state setting the price of the gas and at the same time increasing taxes on competing energy sources at the expense of the households (p. 123). In the aftermath of the oil crises when the oil price decreases the state keeps adjusting taxes to keep the natural gas competitive exemplified by taxes on fuel oil is multiplied by five during the period 1980-1985 to reach 1.4 billion DKK in 1985. During the period 1985-1987 taxes on oil was multiplied by four reaching a total of 6 billion DKK in 1987. The state become in other words both a *new actor* selling gas, and at the same a *new governance* unit controlling the energy market through taxation. The effect from this is *destabilizing* the whole *field* of energy in Denmark.

The destabilization resulted in a spread of energy carriers among the district heating companies make them heterogeneous also to how they regards taxes, which is a potential source of conflict. They arrange themselves in 'clubs' or subunits under the district heating association meeting separately during the year to share knowledge and discuss. The groups are as follows: the 'Coal group', the 'Gas group', the 'Straw group', the 'Wooden chips group' and the 'Technicians from the large district heating plants', and for all the groups the Danish District Heating Association attends the meetings and acts as secretariat.

In 1986 the Danish government and the Danish social democratic party makes a deal for the future development of production of electricity and the saving on energy. This *innovative action* forever changes the Danish district heating landscape from originally being dominated by centrally based electricity works also producing heat as a secondary product, to be outnumbered by decentralized district heating plants now also producing electricity as a secondary product (CHP). The new CHPs shall be using national energy sources like natural gas, straw, wooden chips, biogas and garbage in accordance to the municipal heating plans. All in all the consequence is that others than the electricity works now may produce and sell electricity bringing the Danish District Heating Association closer to the Danish association of electricity works (DEF).

The widely recognized care for the environment has also an impact on Danish District Heating Association, as in using the slogan "The environmentally friendly district heating" in accordance to the institutional logic in a special UN-report named the 'Brundtland report' published in 1987. This verbal expression from the association indicating opportunity leads to innovative actions among the district heating companies which again results in environmentally friendly solutions by not only increasing the effectiveness of their plants, but also in the flexibility regarding type of energy which can be changed according to price and availability.

During this decade the district-heating share of national heat consumption rises from 42% to 50%, where 60% of this is produced as CHP. This is made possible

through intervention by *new actors* as the state, the counties and the municipalities deciding more and more how houses shall be heated and the type of energy to produce the heat. As DONG is state-owned it is obvious for them to promote natural gas to play a vital role in Danish energy politics, as the overall target is to ensure a safe and stable supply of energy. Another effect come from the involvement of public officials which lead to increased bureaucracy implying a heavier burden on the district heating association to keep its members informed but taking away focus from technical issues. This together with energy taxes consequently reduces the member companies' influence on further development of their plants (p. 97).

In 1979 almost all district heating plants used heavy fuel oil, but a decade later, in 1990, this was replaced by other more environmentally friendly sources of energy as coal, natural gas, straw and wooden chips. All this has its origins in the Heat Supply Act and Plan for the supply of natural gas, *destabilizing* the field in favor of district heating.

4.6 Era of Great Change: 1990-2007

The Heat Supply Act was now almost ten years old, and its targets and intensions have been met in most regards. The time was now to revise it, and especially with regard to the environmentally aspects. The revised Heat Supply Act appears in 1990 having focus on the national CO_2 emission and a further development of the natural gas distribution network. The success of this shall be ensured through the execution of a detailed plan made by the Minister of Energy and sent to all Danish municipal council instructing them how, when and what to do (pp. 134-135) as follows:

In stage one (1990-1994) all large coal-fired district heating plants with access to the natural gas network were converted to natural gas fired decentralized combined heat and power (CHPs) plants. All the existing larger and natural gas fired district heating plants were converted to natural gas fired decentralized combined heat and power (CHPs) plants.

In stage two (1994-1996) the remaining coal fired district heating plants with access to the natural gas distribution network shall convert to natural gas fired decentralized CHP plants. The medium sized natural gas fired district heating plants shall convert to natural gas fired, decentralized CHP plants. The majority of district heating companies remote from the natural gas network shall convert to straw, wooden chips or other bio fuel.

In the final stage three (1996-1998) the smaller natural gas fired district heating plants shall convert to natural gas fired decentralized CHP plants. The remaining district heating companies remote from the natural gas network shall convert to straw, wooden chips or other bio fuel.

The three stages shown above poses new challenges on the Danish district heating sector, and influenced almost two thirds of the Danish district heating companies. The district heating companies are not directly forced to make this conversion, but the municipalities are. This imposed a *threat* to the district heating companies, as they are now forced to buy their hot water from whatever the municipalities build to produce it, if the district heating companies doesn´t incorporate the required conversion at their own plants. Therefore, the district heating companies takes the *opportunity* to stay in charge of the production part of their value chain and decides to build the plants themselves.

The Heat Supply Act was first brought into action through the first version in 1979 introducing the state as both a *new actor* of the field and a *governance unit* through the counties and municipalities to prepare the regional heating plans. When this was carried out the second version of the Heat Supply Act in 1990 contains a plan for converting district-heating plants to gas fired CHP plants. In this way the Danish state plays an extremely *dominant* role and making both the district heating and electricity sector to toe the line making a significant shift in the *strategic alignment* that had previously structured and stabilized the field again leading to a *new institutional settlement*.

The bill for the conversion is in any case handed over to the district heating companies amounting to approximately DKK 10 billion over a period of 8-10 years (p. 140). The *institutional logic* of the authorities for phasing out the production of heat only using oil and coal, and to introduce CHP using natural gas, was three fold: The dependency on oil and coal shall be further reduced, CO_2-emmision shall be reduced and finally, the economy in the Danish distribution system for natural gas (DONG) shall be ensured as it has financially been suffering severely during the last years (p. 136). Consequently all these three goals are financed through the heat bill to the district-heating customers. In 2005 the total amount of district heating produced on CHPs has come up to 75% of the total production (p. 158).

To make the projecting of the above possible the Danish District Heating Association founds a consulting company (Dansk Fjernvarmes Projektselskab a.m.b.a. or DFP) as a *new actor* to help their members in the projecting of new plants to compete with the existing consulting companies in the market. This move *destabilized* the field resulting in a lasting reduction of prices regarding consultancy for the planning, projecting, establishing, rebuilding, maintenance and optimizing of district heating production and distribution as well as general consultancy to the owners of existing plants (p. 142).

The Heat Supply Act of 1990 has also another *destabilizing* effect namely the request to build environmentally friendly district heating and electricity plants (CHPs) to serve small communities or villages having up to 250 consumers, and in 1993 there was around 100 such plants under construction. Most of them are

encouraged and even told to use natural gas as single source of energy, which is quite reasonable and sensible at this time. The selling of the produced electricity is subsidizing the heat bill to make these new and small plants economic feasible, which also is the case, until prices of electricity dives and the price of gas skyrockets leaving the small plants miserable and distorting the generally good impression of district heating. Having one dominant actor as sole supplier, governed by the Heat Supply Act made bargaining lower prices on gas difficult or even impossible. The same authorities prohibit a switch to other cheaper and more environment energy sources through the Heat Supply Act.

The above is the situation until 2000 when the gas companies offers DKK 120 million and the authorities DKK 250 million in debt reduction to the suffering small district heating companies. In addition, to escalating gas prices and diving income from the production of electricity their suffering stems largely from a peculiarity in the district heating when compared to electricity: In electric production taxes and levies are paid by the customers through their bill on delivered energy, whereas in district heating taxes and levies are paid by the producer based on consumed energy. Although this might seem a minor subject, the consequences are severe, because when the producer pays the taxes and levies, the heat loss in their pipelines to the consumer is not only lost calories, but also lost money as the taxes and levies on the wasted energy are significantly higher (p. 152).

When small district heating companies might have losses of up to 50% in their pipelines this is mostly due to low consumer density and long distribution distances. In the electricity sector neither production nor distribution losses are subject for neither taxes nor levies, as these appear on the customer's bill calculated on delivered energy. This said, it is certainly also an inherent disadvantage for many district heating companies not being allowed by the authorities to switch from a heavily taxed energy source to a lower-taxed one due to losses in tax proceeds, - despite aspects concerning environmental issues and energy-efficiency (p. 152).

One of the *institutional settlements* that appears, but also comes to an end during the period is the cartel on pipes for district heating in the Danish market. During the period 1990 to 1996 the pipe-producers divides the market between each other to ensure market stability and profit. This comes to an end when a Swedish producer tries to enter the market and the authorities' make an unannounced visit to the probable members of the cartel and finds evidence. The members of the cartel are eventually convicted and agree in 2005 to pay DKK 150 million in compensation to four Danish municipalities (p. 151).

But it is not only in Denmark the CHP is essential and important as the potential for using cogeneration as a measure to save energy. This is also recognized at the European Union by the promotion of cogeneration based on a useful heat demand in the internal energy market. As a direct result of this the European Union decides

the member countries to implement the directive (92/42/EEC), which enters into force in February 2004. The member states has been obliged to begin their implementation since 2006, and it is intended that the directive shall have a significant impact on the legislation and the diffusion of district heating and particularly CHP within the EU member states.

The *primary logic* is stated in the Green Paper, which concludes that the adoption of new measures to reduce energy demand is essential both in terms of reducing the import dependence and in order to limit greenhouse gas emissions. In order to reach this goal, the EU Member States are obliged to produce reports covering their analysis of the state of CHP in their own countries, to promote CHP and show what is being done to promote it, to report on and remove barriers, and to track progress of high-efficiency cogeneration within the energy market. As it can be seen the directive is a *destabilizing event* setting aside the free market forces resulting in both *threat* and *opportunities* also for the business environment. For the Danish industrial sector producing systems and equipment for CHP plants it is definitely an opportunity.

This is also the case for liberalizing the trading of electricity, which becomes a reality in 1996 as a stepwise transition to free competition and is implemented in Denmark in 1999. This is opposed to the Cost-of-Service (Danish: hvile-i-sig-selv) regulation of the district-heating sector, even if the CHPs are engaged in both sectors simultaneously as Siamese twins. They are sharing vital organs and their up keeping, but one side is profit maximizing, whereas the other is Cost-of-Service.

In 2007, the Danish District Heating Association could celebrate its 50^{th} anniversary, having more than 400 district heating companies as members covering more than 98% of the Danish district heating market, covering more than 1,5 million households.

In 1990 the state demonstrates another example of strategic leadership through revising the Heat Supply Act of 1979. This time focus is on the national CO_2 emission and a further development of the natural gas distribution network in this respect to reduce the consumption of oil and coal. It is executed as a detailed plan framing environmental issues to come in the front seat. Again it is the household to pay the necessary conversions to natural gas-fired CHP plants through the heating bill amounting to approximately DKK 10 billion and at the same time assuring customers to DONG so the state can maintain or even increase its income from taxes and levies on the natural gas resources in the Danish part of the North Sea.

Simultaneously the new Heat Supply Act acts as a political opportunity structure encouraging the building of more than one hundred small CHP plants to serve small communities or villages. Again environmental issues are used to frame the use of natural gas instead of oil or coal. But here the outcome was disastrous when price of

natural gas from the state-owned monopolist DONG went up, and prices on produced electricity went down leaving the customer/owners of the small CHP plants in financial jeopardy.

On the contrary the Danish District Heating Association founded a consultancy company to help its members with projecting when executing required conversion. This could also be seen as an example of strategic leadership and to help cultivate the district heating network and thereby altering existing structures. This initiative could also be seen as a way to diffuse knowledge or best practice among the association's members.

In addition, the Danish district heating companies also founded Danish Board of district heating (DBDH) and FIF-Marketing as network cultivation but also as an expression of strategic leadership to support and assist district heating companies in their communication with the environment.

5. DISCUSSION

Firstly, in this qualitative study we have used the synthetic framework of McAdam and Scott (2005) where they combine movement theory and organizational theory, and institutional theory in particular. Even though the framework is widely cited, examples of illustrating the framework, -apart from their own two applications, are indeed challenging to find. To our knowledge the only additional study to demonstrate McAdam and Scott's (2005) framework is performed by Den Hond and De Bakker (2007) as they operationalize *parts* of the framework. The study has remedied this by mobilizing the conceptual system and the underlying theory as described in the work of McAdam and Scott (2005) to analyze the book *Dansk Fjernvarme i 50 år: 1957-2007* (the 50th anniversary book of Danish District Heating Association), published in connection with the association's 50th anniversary.

It shall also be mentioned, that when using the analytical framework of McAdam and Scott (2005) it is not an inherent request that the organizations to be studied shall necessarily be a 'movement' themselves (cf. McAdam & Scott, 2005, p. 18). But, by a coincident when applying the continuum of types of social organization having social movement and formal organizations at opposing ends of the scale, the formation of the early district-heating sector will definitely be closer to the social movement as a kind of rural co-operatives, which is also recognized by van der Vleuten and Raven (2006, pp. 3741-3742).

Second, by operationalizing the interaction between movement mobilization and institutional processes in the organizational field of Danish district heating, we build on the insights of McAdam and Scott (2005) and develop one way of integrating movement and organizational research to investigate the transition from being a social movement to becoming institutionalized. When the remnant aspects of social movement are finally disappearing from the Danish district-heating sector, the sector is expected to end up in an institutional settlement, after a transitional period. But, in this particular case it seems the sector is still in a kind of flux between social movement and institutionalized setting, as there are many indications of this social movement still exists such as, for example, when smaller co-operationally owned Danish district-heating plants still is operated by part-time unpaid retirees or board-members.

Schneiberg and Lounsbury states that 'movements might figure in the production of unintended and incremental *trajectories* of change', and 'even when they are defeated or their time has passed, movement may leave legacies, elements of institutional orders and bits and pieces of paths not taken, producing important effects, and creating possibilities for subsequent movements, institution-building and transformation' (Schneiberg & Lounsbury, 2008, p. 651). The close co-operation across the sector orchestrated by the Danish District Heating Association not only by arranging knowledge sharing through activities and courses, but also as a corrective factor and a uniform voice on behalf of its members in contact with the authorities could also imply fragments of the original movement might have survived throughout the sector as an overarching idea.

In this way the Danish district heating movement indicate not only how ordinary people may find and develop clever solutions to satisfy fundamental needs, or to solve challenges such as, for example, recycling (Lounsbury *et al*., 2003) or mutual fire insurance (Schneiberg, 2002), but also how reminiscences of the original movement may lead to some degree of intrinsic motivation among employees even when reaching institutional settlement. Instead of having processes at a certain époque in time, as a distinct transitional period, the transitional processes should be regarded more as a permeating reciprocal process that, in this case, persists over a prolonged period of time as indicated in Figure 2.

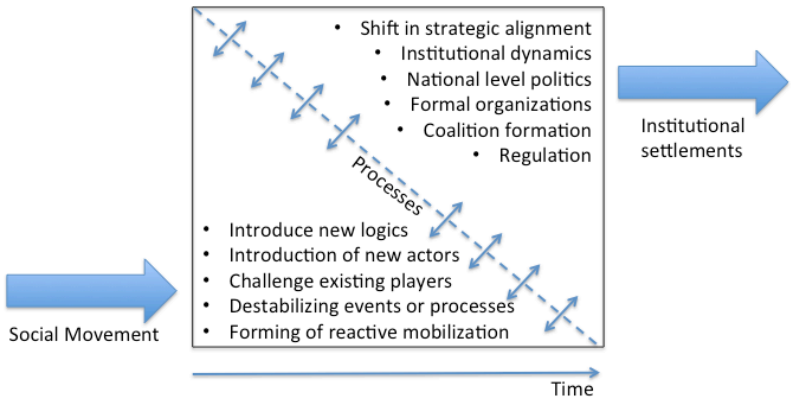

Figure 2 Illustration of the transitional processes of the Danish district heating social movement (inspired by Scott, 2008, p. 195).

Figure 2 highlights that processes are not as expected and illustrated in Figure 1 (p. 78) where a distinct transitional period is supposed and displayed according to Scott (2008, p. 195). In this way, this study contributes to the scholarship by illustrating how the transition from social movements to institutional organizations is orchestrated by the nature of the social movement itself and the reciprocal and permeating processes instigating the transformation to institutional settlement.

Third, Figure 2 diagrams how the original 'Danish district-heating social movement' brought with it the introduction of new logics, introduction of new actors, challenged existing players, destabilized events and processes and the formation of reactive mobilization. According to Weber and King (2015), the blending of social movement and organizational theories 'offered a way to re-introduce overt conflict as an important organizational dynamic, that underlies much structural change' (Weber & King, 2015, p. 494). But, as we have seen, it is not 'conflicts' as such that drive the evolutionary adaption of district heating in Denmark, but rather constructive ripening of opportunities and entrepreneurial behavior, although on a scattered and uncoordinated basis. Examples of this in the early phases of sector development are prominent private citizens in the local communities promoting and establishing district heating companies on a collective basis, having local politicians or city majors as supporters of these local initiatives.

Indeed, there were actors profiting on the emerging Danish district-heating sector such as, for example, subcontractors, entrepreneurs and suppliers of equipment. Projects had to be initiated and followed through to completion also vis-à-vis the authorities. Someone had to make the ditches for the pipelines, so the plumbers could lay the pipelines together with valves and pumps. The plants had to be projected, engineered, erected and equipped with adequate technology for the

consortium of co-operative district heating owners or for the municipality. History shows there where many suppliers propagandizing for new district heating plants having substantial economic gain from the development.

When searching for answers to why the very large penetration of district heating in Denmark where Mortensen and Overgaard (1992, p. 1198) suggest looking to accessibility of resources, rivalry between systems and individualist behavior, and energy planning and legislation, there seems to be a combination of all, but there are also additional. The contribution to literature on district-heating penetration in Denmark is four-fold: First of all there is a co-operative behavior through the early district heating movement. Secondly, the early rivalry between electricity, gas and district heating was by clever politicians turned into a synergetic system where all the three took advantage of each other's strengths and opportunities. Thirdly, there were many commercial interests involved taking advantage of the district heating expansion for making additional profit and thereby enhanced the expansion.

People external to the association have authored the anniversary book, but it would never be classified as 'value-free', simply because it is an anniversary book. In addition, it is written retrospectively using contemporary frameworks and ways of understanding. Despite this the book is used as an empirical source, as the applied method of analysis adds texture and new interpretations to the text. Some readers will no doubt be concerned that this research rests on an association's anniversary book. Fortunately, the variables we use, as various measures of size, numbers and types of organizations, ownership status, are reasonably straightforward, non-sensitive and easily reported.

6. CONCLUSION

The application of the framework of McAdam and Scott in this study has successfully mirrored the author's attempt to display their framework (2005, p. 19-38) and has proven its value by adding texture to a common text and bringing new perspectives not only to a sector's history, but also to the understanding of a nation's development. The used framework has demonstrated its ability to encompass structures and processes, as well as established and emergent organizations, transgressive contention as well as institutionalized authority, and helps explain the connections between local or specialized fields and broader societal systems. In this way this study contributes to literature by operationalizing the *whole* framework where Den Hond and De Bakker (2007) only operationalize *parts* of the framework.

By applying the above framework, we have found that the transition from being a social movement to become institutionalized is not ended in the case of Danish district heating as the sector is still in a kind of flux between the two. So, instead of having a certain époque in time as a distinct transitional period where the movement transforms to become institutionalized, the transition should be regarded more as a permeating reciprocal process that, in this case, goes on over a prolonged period of time. This indicate the importance of being aware of the antecedent to a sector, as the reminiscences of the original movement may lead to some degree of intrinsic motivation among employees even when reaching institutional settlement.

We have also seen how the transition took place in this particular sector from being a social movement to becoming institutionalized. It was not through 'conflicts' as such, but rather through constructive ripening of opportunities and entrepreneurial behavior. Firstly, there is a co-operative behavior through the early district heating movement. Secondly, the early rivalry between electricity, gas and district heating was by clever politicians turned into a synergetic system where all the three took advantage of each other's strengths and opportunities. Thirdly, there were many commercial interests involved taking advantage of the district heating expansion for making additional profit and thereby enhanced the expansion.

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CHAPTER 4: ARTICLE 2

THE FORGING OF TOMORROW'S RULES: STRATEGIC MANEUVERINGS IN THE WAIT FOR RE-REGULATION[4].

ABSTRACT

The study sought to explain the puzzle of why and how firms adapt to proclaimed institutional pressures from regulators. Based on a qualitative study of Danish district-heating organizations' responses to institutional pressures from government, as the sector faces a re-regulation initiative to improve efficiency as a part of public sector reforms, results revealed that only a small group of resourceful firms responded, and with 'sagacious conformity'. The case study shows how a particular network of organizations with uniform institutional logic was able to negotiate and agree upon the introduction of a special form of management technology, namely network benchmarking as a forerunner to the expected benchmark regulation. The study contributes new insights into theories of organization's responses to institutional pressures, network benchmarking and sector behavior.

Key words: utility sector; institutional theory; network benchmarking; Denmark; management technology; public sector reforms.

1 INTRODUCTION

Between the mid 1980s and the late 1990s the idea prevailed among government regulators in the Western part of the world that competition between public

[4] *The author is indebted to the managers of the six-city group of companies, namely: Aalborg Forsyning (Varme), AffaldVarme Aarhus, Esbjerg Forsyning, Fjernvarme Fyn, Hofor Fjernvarme and Verdo Varme for providing access to their meetings and being available for interviews.*

organizations (as well as between private and public) would guarantee not only more efficient use of resources, but also the opportunity for consumers to choose between several providers according to requested quality of service (Barretta & Busco, 2011, p. 212). However, it was soon realized that this increased focus on competition did not necessarily lead to improved efficiency and effectiveness for the benefit of the consumer. Rather, the greater competition among providers of public service instigated various complications, comprising irrational economic behaviors, and prevented inter-organizational co-operation (Pettersen, 1999). This again has encouraged many countries to re-arrange their public sector into various kinds of networks, often governed by a co-operative agreement and led by a regulatory body (e.g. Barretta, 2008; Kurunmäki & Miller, 2011).

The view of market forces to ensure efficient use of resources requires consumers to switch, -at their will, from one supplier to another. But, the nature of many public suppliers is that of territorial or natural monopolies, implying that a switch between them forces the consumer to physically move from one area to another. However according to van Helden and Tillema (2005, p. 340) the desire to switch suppliers of public services is not enough to encourage consumers to geographically relocate. Hence, the idea of substituting consumer choice with that of relative performance measurement to demonstrate efficiency came up as an alternative and appeared in the shape of benchmarking (cf. Siverbo & Johansson, 2006) as a mechanism not only to encourage companies to reach a common 'best practice' (Knutsson *et al*., 2012), but also to 'demonstrate or increase public accountability and value for money' (Bowerman & Ball, 2000, p. 22).

The idea of competition to improve public service is not new and according to Vogelsang (2002, p. 5) 'incentives in general and price caps in particular has breathed new life into public utility regulation' for example through price caps, rate case moratoria, profit sharing, banded rate-of-return regulation, yardstick regulation and menus, where the last allows the regulated company to choose among different incentive regulation plans. Yardstick regulation and benchmark regulation are close cousins both being a product of New Public Management (Hood, 1991, 1995). Even though the interest in benchmarking has mainly its offset in the absence of traditional market mechanisms for public enterprises or services, it is also promoted to enhance users' understanding of service quality and price in many areas in the public sector.

The introduction of competitive mechanisms into the public sector is interesting as the inherent nature of the public sector is generally seen to provide adequate services as effectively and efficient as possible and focusing more on inter-organizational co-operation than on competition (Kyrö, 2003, p. 216), or the balancing of collaborative and competitive elements (Braadbaart & Yusnandarshah, 2008). This ambiguity has encouraged several researchers to consider the roles of management control systems (e.g. Malmi & Brown, 2008) in the context of inter-

organizational relations in the domain of public administration.

Examples of the above could be found in a special issue of Management Accounting Research (Management Control Innovations in Public Sector Networks, Vol. 22, Issue 4, December 2011, pp. 211-350) where all are involved in the search for cooperation through management control innovations. However, these attempts to shed light on inter-organizational relations all consider situations where partnerships emerge out of regulatory interventions established by government mandate (Barretta & Busco, 2011, p. 213), but limited attention has been dedicated to studying when this relationship is the result of *voluntary* co-operation within the public sector. We believe this is an important gap in the existing literature, which this study intends to start addressing by applying Oliver (1991) to study strategic maneuvering when a sector is exposed to institutional pressures, as this will make it possible to compare outcomes of the different situations and hopefully contribute to cross-fertilization between the two.

When the benchmark regulation was set high on the agenda by the authorities in 2004, the Danish District Heating Association took the lead and initiated the ERFA-group on benchmarking to meet the demand and act proactively. This led to many meetings, courses, workshops and publishing of articles in the name of the association, for its member organizations, to prepare the sector for the announced benchmark regulation. In addition, to these actions negotiations and discussions where also made towards the authorities on how the sector should prepare itself for the institutional pressures (Danish Energy Agency, 2007, pp. 25-28). And, as will be shown, it is this institutional pressure of this benchmarking re-regulation that sparked a particular voluntary benchmark initiative within the sector known as the ‘six-city benchmark model project’.

We suggest that analyzing such a constellation will illustrate something distinctive about why and how they entered into such co-operation as well as about inter-organizational processes. Additionally, this could be a suitable situation to study what Scott (2008a) claims to be a neglected area, namely ‘the processes at work in the transitional period during which successful movement objectives are “handed off” to legislatures and the public agencies for follow-through and implementation’ (Scott, 2008a, p. 195), and further the insight into 'the role of organizational self-interest and active agency' (Oliver, 1991, p. 145). The article will also address Haunschild and Chandler (2008) stating that variations in actor responses to the same institutional environment can produce greater heterogeneous, rather than homogenous, outcome (Oliver, 1991) which is seen as a very important area of future research.

In this study we draw in particular on Oliver’s (1991) predictive model of strategic responses to institutional processes to analyze how efficiency and legitimacy concerns, the influence of external constituents, and consistency between

institutional and organizational goals influence resultant structural and control choices in the six-city network. Specifically, we examine how the network introduces a specific management technology in the form of a relative performance measurement system, namely the aforementioned benchmarking model to enhance the understanding of the introduction of management technology in general, and to further the insight into 'the role of organizational self-interest and active agency' (Oliver, 1991, p. 145).

Abernethy and Chua (1996, p. 597) points to that Oliver (1991) did not 'envisage a situation where organizations go beyond what is required by key stakeholders' and indicate a possible links between 'institutional pressure and strategic innovation'. Modell (2001) found that legitimacy-seeking and efficiency-enhancing rationales might be more interwoven than acknowledged by Oliver (1991). This is reflected in management's belief that complying with a new imposed requirement could also be used to justify improvement in internal financial control. Modell (2001) also conclude that consistent with Oliver (1991) that, were 'voluntary diffusion predominates over coercive pressures, senior management may have considerable discretion to preemptively go beyond institutional demands in anticipation of future benefits rather than slavishly mimic institutional practices imposed by politicians'.

Grafton *et al.* (2011) also apply Oliver (1991) on a horizontal network, were they study an imposed collaboration among three public hospitals. They confirm the usefulness of the Oliver (1991) framework to the understanding of inter-organizational responses to institutional pressures and illustrate the complexity of determining the collective response of multiple organizations in the mentioned context. Although they ask for future research on Oliver's (1991) model, with less institutionalized settings in which more resistant forms of responses such as manipulation may be anticipated. Guerreiro *et al*. (2012) on the other hand apply Oliver (1991) where they study voluntary behavior by large Portuguese unlisted companies.

The above confirm that Oliver's (1991) framework is useful in analyzing how organizational responses to institutional pressures translate into the diffusion of specific financial accounting standards, especially when allied with an institutional logic approach. Even though Oliver (1991) is indeed central in this study, the purpose is not to 'test' the hypothesis in an orthodox sense, but rather to see if the framework can assist the contribution to benchmarking literature through the empirical findings within the district-heating sector, as this study appears to be the first of its kind.

Benchmarking issues

Benchmarking is an often-used modern term associated with a broad range of human endeavor. According to the online Oxford Dictionaries the noun

'benchmark' is defined as 'a standard or point of reference against which things may be compared', such as, for example, 'a surveyor's mark cut in a wall, pillar, or building and used as a reference point in measuring altitudes'. The verb to 'benchmark' is likewise defined as to 'evaluate (something) by comparison with a standard'. In contemporary societies we encounter benchmarking and its consequences both directly and indirectly. For instance, as citizens we often see how politicians use benchmarking to compare with other countries to ground or argument for their policy. Or, employees may see how labor union perform benchmarking surveys, as also could be deployed by employers through trade or professional associations. But benchmarking is also found elsewhere.

In 1999 the Danish Economy Agency (1999) performed an analysis to contribute to the section 'What is benchmarking' in a publication from the Danish Ministry of Finance (1999) intending to serve as a toolbox to help public services become more efficient. Here they group benchmarking into three methods: performance-benchmarking, process-benchmarking and strategic benchmarking. The first is benchmarking of economic indicators, but could also include time or quality as a relative performance evaluation. The second is comparison of methods and practice in order to learn from others to become better. The third is to compare strategic choice and targets towards others to serve as inspiration of own strategic planning. Regarding process benchmarking to be successful it is, according to the Danish Ministry of Finance, imperative that partners demonstrate openness and willingness to learn, and not having a competitive attitude (1999, p. 8).

As a follow-up on Danish Ministry of Finance (1999), the same ministry issued a more comprehensive publication in 2000 describing in more detail benchmark methods and practical experiences from the Danish public sector. They describe performance benchmarking and process benchmarking in detail and present a long list of different uses and applications of benchmarking such as, for example: part substitute of market forces, to find and implement 'best practice', 'follow-up'-tool for management, identify sectors prone for improvement, and reduce information asymmetry. In other words, the Danish authorities introduced benchmarking as an all-round solution to be used in the Danish public sector on issues ranging from knowledge sharing and learning, to regulation and governing (Danish Ministry of Finance, 2000).

One point of particular interest concerns the potential efficiency gains in the Danish district-heating sector, which are a combination of both discretionary decisions within each district-heating organization and framework conditions. Regarding the first of these two, the Danish Energy Agency & Danish Competition Agency (2004, p. 35) states, 'An assessment of the short-term realizable potential requires a process benchmarking analysis at the individual works'. In other words, for regulatory benchmarking the authorities first advise a performance benchmarking to see the potential, and thereafter a process benchmarking analysis shall be performed

within each organization to find individual and realistic potentials, which according to the Danish Ministry of Finance (1999) presupposes comparison of methods and practice in order for the district-heating organizations to learn from others to improve. It seems therefore that the Danish authorities acknowledge the usefulness of benchmarking to regulate organizations and have the same organizations to learn from each other simultaneously, which seems paradoxical.

Utilities (e.g. water, sewage, gas, district heating and electricity) are, despite their diverse ownership structures, also an integral part of the public sector and are therefore subject to detailed regulations formulated by the Danish authorities. For the Danish district-heating sector, the initiative from the Danish Ministry of Finance (2000) for more detailed regulation is overseen by the Danish Energy Agency & Danish Competition Agency (2004). Here they present the Danish district-heating sector, its present standing and ideas for making it more efficient, where performance benchmarking is mentioned in particular. As benchmarking is regarded as a potentially useful tool, it has incorporated data from the sector, but the results strongly indicate its use is not straightforward. Of particular concern are data quality, comparability of data, and the 'biodiversity', or the heterogeneity, of the sector. The solution to these obstacles is proposed to be uniform accounting rules and a standardized chart of accounts for the whole sector.

Research questions

The research questions we ask in this article are the following:

- How does the framework of Oliver (1991) reveal strategic maneuvering in a regulated utility sector when exposed to institutional pressures, and how does the same framework assist the contribution to benchmarking literature through empirical findings?
- How do scope conditions impact the outcome of relative performance evaluation in a voluntary, horizontal and collaborative network of organizations?
- What are the main issues regarding the benchmarking framework when benchmarking is supposed to enable learning?
- How is the framework of Cox *et al.* (1997, p. 291) supplemented when incorporating regulatory benchmarking?
- How may different responses to institutional pressures due to dissimilar scope conditions lay the foundation for greater heterogeneity within a sector?

In the following section two Oliver's (1991) conceptual framework regarding managerial responses to institutional pressure is presented. In section three the employed research design and methodology is presented as well as a presentation of the empirical context. Next the empirical findings are presented and thereafter analyzed according to the applied framework, following the original outline of

Oliver (1991). In section five the findings are discussed, and finally concluded in section 6.

2 MANAGERIAL RESPONSES TO INSTITUTIONAL PROCESSES

Oliver (1991) has attention on 'the strategic behaviors that organizations employ in direct response to the institutional processes that affect them' (Oliver, 1991, p. 145) representing not only the insights of the New Institutional Sociology (e.g. Meyer & Rowan, 1977; DiMaggio & Powell, 1983; Brignall & Modell, 2000) emphasizing the importance of complying with external rules and standards, but also the contrasting views of *strategic choice theory* (Child, 1972; Beckert, 1999) as well as *resource dependence theories* (Pfeffer & Salancik, 1978; Scott, 2008b; Hillman *et al.,* 2009) which stresses organizations' abilities to impact their environments.

New Institutional Sociology (NIS) is widely used by researchers in various management accounting settings to interpret not only the institutions themselves, but also their actions (e.g. Barretta & Busco, 2011; Grafton *et al.*, 2011; Cui & Jiang, 2012; Desai, 2012; Guerreiro *et al.*, 2012; Hsu & Qu, 2012). Whereas NIS emphasizes conformist behavior and to explain how inter-organizational change is diffused within an organizational field (Arroyo, 2012, p. 289), strategic choice suggests a 'goodness of fit' between organizations' position relative to objectives and what is achievable (Child, 1972, p. 17), and resource dependence theory stresses all kinds of non-conformist behavior. Or, as Oliver (1991) puts it:

> *As the uncertainty of the environment diminishes, the need for security, stability, and predictability from the persistence of institutionalized norms decreases and organizations grow more confident in their predictions about the acquisition of future resources and legitimacy. Under these conditions, the manipulation and defiance of institutional values and the constituents that express them are seen as less risky strategic alternatives for achieving organizational goals (Oliver, 1991, p. 171).*

By blending institutional theory with strategic choice theory and resource dependency theory Oliver (1991) develops a conceptual framework enabling the study of how organizations react to institutional pressures and especially how they react politically. The presence of institutional response patterns is also recognized by van Helden and Tillema (2005) in their study of benchmarking in wastewater

treatment by Dutch water boards.

Oliver (1991) identified many possible responses which can be seen as continuum from 'acquiescence' to 'manipulate' where it is important to note how the different strategies may result in various tactics as seen in Table 1 below.

Table 1
A continuum of managerial responses to institutional pressures. (Adapted from Oliver, 1991, p. 152).

	Strategies	Tactics	Examples
Low ↓ Degree of active resistance ↓ High	Acquiesce	Habit	Following invisible, taken for granted norms
		Imitate	Mimicking institutional models
		Comply	Obeying rules and accepting norms
	Compromise	Balance	Balancing the expectations of multiple constituents
		Pacify	Placating and accommodating institutional elements
		Bargain	Negotiating with institutional stakeholders
	Avoid	Conceal	Disguising nonconformity
		Buffer	Loosening institutional attachments
		Escape	Changing goals, activities, or domains
	Defy	Dismiss	Ignoring explicit norms and values
		Challenge	Contesting rules and requirements
		Attack	Assaulting the sources of institutional pressures
	Manipulate	Co-opt	Importing influential constituents
		Influence	Shaping values and criteria
		Control	Dominating institutional constituents and processes

Oliver (1991) put forward ten hypothesis which she then tested and later became known as the ten predictive factors as can be seen in Table 2 below. The predictive factors are reflecting the likelihood of strategic response of which all factors are relevant for the case under study in this paper.

Table 2
Institutional antecedents and predicted strategic responses (from Oliver, 1991, p. 160).

Predictive Factor	Strategic Responses				
	Acquiesce	Compromise	Avoid	Defy	Manipulate
Cause					
• Legitimacy	High	Low	Low	Low	Low
• Efficiency	High	Low	Low	Low	Low
Constituents					
• Multiplicity	Low	High	High	High	High
• Dependence	High	High	Moderate	Low	Low
Content					
• Consistency	High	Moderate	Moderate	Low	Low
• Constraint	Low	Moderate	High	High	High
Control					
• Coercion	High	Moderate	Moderate	Low	Low
• Diffusion	High	High	Moderate	Low	Low
Context					
• Uncertainty	High	High	High	Low	Low
• Interconnectedness	High	High	Moderate	Low	Low

According to Oliver (1991) there are certain boundaries on the willingness and ability that determine the likelihood of resistance for companies to conform to institutional pressures. The explicit critical point in this paper is the institutional pressures by governmental agencies to extend the regulatory measures already imposed on the Danish district heating organizations by introducing a form of benchmark regulation using accounting numbers and how members in the six-city coalition has chosen to prepare themselves for this eventuality.

The responses towards conformity depends on why these pressures are being employed, who is employing them, what these pressures are, how they are employed and where. Oliver (1991) has outlines these five antecedents as follows: cause, constituents, content, control and context, having a corresponding ten variations to determine choice of strategy. They will be presented and explored below following the same order as presented by Oliver (1991). Obviously the different predictive factors are by nature intertwined in each other making them challenging to separate as they often work together, but nevertheless this study seeks to treat the predictive factors separately.

Oliver (1991) hypothesized that a major *cause* of adoption of structural attributes is the organizational quest for social legitimacy and efficiency, which are equally important determinants. As examples of pressures for making organizations more social fit or acceptable Oliver (1991) mentions laws governing pollution emissions, the delivery of safe products and services, and the promotion of health and safety for employees. Regarding economic fitness or perceived efficiency gains issues of economic accountability and rationalization are similarly important objectives of many institutional pressures as many corporate donors or government sponsors opt

for the organizations to become more business-like also concerning the use of funds like in a New Public Management (NPM) situation.

Concerning the pattern in which institutional practices are diffused, Oliver (1991) distinguishes between coercive pressures and voluntary diffusion, where the latter signifies somewhat lower pressures for conformity originating from mimetic or normative isomorphism (e.g. DiMaggio & Powell, 1983). When conformity is anticipated by an organization to enhance social or economic fitness, acquiescence will be the most probable strategic response to institutional pressures, although organizational skepticism will occur if the conformance will jeopardize the requested quality of services or products they deliver. If for example a non-profit organization is exposed to institutional pressures and the legitimacy or economic gain is low, organizations will try to compromise on the requirements for conformity, avoid the conditions that make conformity necessary, or defy or manipulate the criteria or conditions of conformity.

In addition, to these institutional theory inspired reflections, resource dependency theory opens up for more heterogeneous strategic responses from the organizations, and accordingly the choice between acquiesce and more resistant responses will depend on the degree to which the organization in question agrees with and values the expectations the institutional constituents are attempting to achieve (cf. Oliver, 1991, pp. 160-161).

The *constituents* of institutional pressures include the state, interest groups, professions, customers and the general public, imposing a variety of expectations, laws and regulations on the organization, often being confronted with multiple conflicting pressures. Passive acquiescent to institutional pressures is difficult if resulting in conflict with expectations or requirements from other constituencies. Therefore, acquiescence is most likely to occur when expectations from multiple and conflicting constituents imposed on an organization is low and vice versa. Organizations may even choose to challenge the demands of one constituent in order to comply with another. From a resource dependence point of view organizations will also be driven by perceived benefits to reduce uncertainty, instability and conflict caused by multiplicity (Oliver, 1991, pp. 162-163).

An organization's dependence on the constituents will also predict the likelihood of resistance to organizational pressures in line with institutional theory on isomorphism with the institutional environment, claiming organizations to be more likely to resist the demands from constituents on whom they are not dependent. When dependence is low, resistance represents minimal risks to organizational interests, as they are not held captive by constituencies, and vice versa. From a resource dependence point of view the organizations similarly will be less likely to resist institutional pressures from constituents on whom they are dependent.

The *content* of institutional pressures are themselves playing a vital role in predicting the employment of alternative strategies, namely the consistency of the pressures towards organizational goals, and the loss of options for decision-making the pressures inflict on the organization. But again, the organization will be more likely to acquiescence when these pressures are not in conflict with internal goals. When consistency is extremely low between the institutional pressure and the organizational goals and consequences for organizational obedience is severe resistance will be an obvious choice. Regarding the constraint institutional pressures impose on organizations, it is obviously easier to acquiescence to matters of less importance. Issues impacting autonomy are likely to invoke organizational resistance and activate professions and associations to become politically involved in setting standards or shaping regulatory policies.

Organization's reaction to institutional pressures as *control* depends on the degree of coercion and diffusion: the more legal coercion behind the institutional pressures the lower the resistance, and similarly the more voluntary diffusion of institutional norms, values or practices among the organizations the lower the resistance. Not surprisingly when consequences for a defying attitude to institutional pressures from government mandate or law, the organizations resistance are low, and vice versa. When the constituents of institutional pressures are more moderate in their enforcement and sanctions organizations often negotiate aspects of their compliance. Organizations also use window-dressing and ritualistic procedures to avoid institutional pressures (Oliver, 1991, p. 168).

The more diffused an institutional norm or practice has been spread voluntarily, the higher the probability or propensity for it to become institutionalized by the organizations in the organizational field, which also is congruent with DiMaggio & Powell's (1983) mimetic view of organizational conformity, and vice versa. And eventually when such institutional norms or practices are widely diffused, the social validity becomes unquestioned, or taken-for-granted, resulting in an acquiescent behavior of the whole field, and vice versa (Oliver, 1991, p. 169).

The *context* of institutional pressures concerns how the organization's environment and the degree of interconnectedness impact the organizational resistance to institutional pressures. Oliver (1991) claim that the lower the level of uncertainty the greater the likelihood of resistance, and likewise the lower the degree of interconnectedness the greater the degree of resistance. Environmental uncertainty is here defined as the degree to which the future states of the world cannot be predicted and anticipated. Interconnected is defined as the density of organizational relations among participants in the organizational field (Oliver, 1991, p. 170).

Both institutional and resource dependence theorists suggest that organizations have a strong preference for stability, certainty and predictability, and it is, therefore, predicted by Oliver (1991, p. 170) that organizations tendency to acquiescence,

compromise and avoidance strategies most likely will occur when environmental uncertainty is high. When uncertainty is high organizations are also most likely to imitate one another and to seek reduction of uncertainty through negotiation. As the uncertainty grows smaller organizations seems to risk defiance and manipulation strategies to meet organizational goals.

When the institutional environment is highly interconnected acquiescence and compromise is expected as response to institutional pressures. Both institutional and resource dependency theorists expect voluntary diffusion of norms, values and shared information in this situation, promoting institutional isomorphism and conformity (Oliver, 1991, p. 171).

3 RESEARCH DESIGN AND METHODS

Responding to Scott's (2008a) challenge to study 'the processes at work in the transitional period during which successful movement objectives are "handed off" to legislatures and the public agencies for follow-through and implementation' we study a particular part of a sector through the lens of Oliver (1991). The sector in question is exposed to re-regulative measures through benchmarking from the authorities, but as these initiatives have not yet materialized it is possible to study the responses 'in the making' (Latour, 1987).

According to Agranoff and McGuire (2003), Huxham (1996) and Kanter (1994) inter-organizational collaboration refers to independent organizations explicitly agreeing to interact to pursue common goals that help advance their own specific objectives. As this could emerge as a coalition that seek to influence the environment through joint action to provide for perceived common good through the pursuit of mutually agreed-upon goals and objectives we have particularly chosen a part of the sector, namely a network of actors which has shown a proactive behavior.

Having this network populated by individuals representing the participating organizations multi-level aspects are brought into play and according to Yin (2003, p. 40) the study could be seen to fall into the single-case study. But at the same time key representatives from the same participating organizations are embedded in the project as logical sub-units forming multiple units of analysis and overall this results in what Yin call an 'embedded, single-case design' (2003, p. 43).

It shall also be remarked that even though this study is on co-operation within a network and how their strategic maneuverings can be understood using Oliver

(1991), it is also about a specific accounting model, namely the 'benchmark model'. The model plays an important role, as it is the direct reason why the six organizations collaborate in the first place. Through their struggle to construct a feasible version to be prepared for the benchmark regulation to come the model itself acts both as a mediator and a means in itself. Central to this model is a standardized chart of accounts prepared by the sector together with a guideline, as well as relevant laws and regulation.

At the outset the level of analysis (e.g. Thornton & Ocasio, 2008, pp. 106-108) is the six-city network, which generally seen is a group of key personnel, employed in horizontally related but independent organizations belonging to the same trade association explicitly agreeing to interact to pursue common goals or, in other words, a coalition (e.g. Clarke, 2000, p. 209). It should also be mentioned the six-city network is an exclusive group of companies closed for all other than the six, and the formation of the group dates back more than a decade.

The study is focused on what is happening at group level as an expression of both inter-organizational relationship and processes, both of which are gaining increasing attention in the literature (cf. Barretta & Busco, 2011). Even though the focus on group level, the key personnel participating in the six-city benchmark model project meetings are of particular interest being embedded in their respective organizations representing intra-organizational sources of data. Albeit there certainly are other intra-organizational sources of data, these are not the focus of this study.

According to Yin (2003), the ability to look at sub-units situated within a larger case may prove powerful as data can be analyzed within the subunits separately (within case analysis), between the different subunits (between case analysis), or across all of the subunits (cross-case analysis) overall 'allowing the researcher to understand one unique/extreme/critical case' (Baxter & Jack, 2008, p. 550).

3.1 Empirical domain and data collection

The empirical domain of this paper is the *organizational field* of Danish district-heating encompassing a set of interdependent populations of organizations participating in the same cultural and social sub-system (DiMaggio & Powell, 1983; Scott & Meyer, 1983) including institutional logics of the participants as well as empowering and constraining governance structures (Scott, 2008a, p. 208). Starting as a fragmented unregulated sector it has grown to be a highly regulated mature sector with more than 400 individual district heating plants.

In order to organize the multitude of organizations the Danish District Heating Association was founded in 1957 and plays an important role in the multi-level field of Danish district heating, its members covering the space heat demand of

more than 63% of Danish households equal to 1,6 million households. The association represents the majority of Danish district heating companies as a secretariat towards authorities and other stakeholders as well as diffusing new inventions among its members through meetings, courses and workshops.

Furthermore the association also initializes and supports knowledge-sharing groups among its members. One of these groups of particular interest in this paper is the benchmark knowledge-sharing group called the 'ERFA-group on benchmarking'. The group's main purpose is to work for a better understanding of the concept of benchmarking, and to co-ordinate efforts within the sector to prepare for a future regulatory benchmarking. The group was established in 2005, and is open for all members of the association to participate.

Being an important part of the infrastructure, Danish district heating companies are subject for regulation as a natural monopoly, as the inherent characteristics of district heating makes it impossible for customers to shop among competing suppliers to achieve the desired quality to price. To protect the customer as well as ensuring an infrastructure to meet the growing environmental concern and fuel flexibility Danish district heating has been regulated since the introduction of the Heat supply act of 1979 (Danish Energy Agency, 2013).

The present regulation of the district-heating sector is based upon what is commonly known as a 'cost-of-service'-regulation where the customer pays the price of the service according to her use, to cover the costs of the supplying company. This form of regulation is suspected not to carry incentives for the supplier to improve and especially regarding matters concerning efficiency (e.g. Olson & Richards, 2003; Jamasb *et al*., 2004; Giannakis *et al*., 2005; Jamasb & Pollitt, 2007) and therefore a benchmark regulation is announced.

To prepare for the anticipated benchmark regulation the Danish District Heating Association has orchestrated numerous debates and articles related to benchmarking published through their monthly magazine FJERNVARMEN as well as publishing yearly sector statistics. The association has also been directly involved in preparing a standardized chart of accounts and a set of key figures for benchmarking, and held numerous courses to train or prepare its members on benchmark related topics in the same period, as well. In addition, the ERFA-group on benchmarking has had regular meetings, as well as arranging many workshops.

In this study it is particularly the 'six-city'-network, which is of interest and in focus. It is a private initiative by six of the largest district heating companies in Denmark having worked together on several issues for a longer period, and since 2008 they have in particular been constructing their own 'private' benchmark model, although based on a benchmarking model developed by the aforementioned ERFA-group on benchmarking, originating from a standardized chart of accounts

with guidelines developed by the Danish District Heating Association (2005). It should also be mentioned the six-city network is an old constellation of organizations owned by six respective municipalities, and they work across the board in many instances within public administration.

The six-city network is studied across a period of four years as a mix of participant observation, individual interviews and review of internal documents. Interviews with managers in the six-city companies lasted generally between one and two hours and were taped and transcribed. Although these interviews were semi-structured we attempted to apply what Alvesson (2003) calls reflexive interviewing were we tried to have an open dialogue with the interviewees. Additionally, managers and board members in nine Danish district heating companies were interviewed especially during 2008, as well as representatives from the Danish District Heating Association and the Danish Energy Regulatory Authority, in order to establish to know the sector. It shall also be mentioned that we have attended all meetings in the group for knowledge sharing (called ERFA-group) for benchmarking from 2008 to 2012, as a regular member of the group and not merely as an observer

During negotiation of access with the six-city members, confidentiality was agreed, but limited to veil names, numbers and ranking from their benchmarking project. It was also agreed to provide the resulting paper for correction of 'points of facts' before an eventual published outcome. During observations, detailed notes were taken by me about who was there, who sat where, timing of events, turn taking in conversations, recording pithy phrases and 'local idioms' verbatim. The observations at group level took place during five meetings (see Table 3), where the first four are during design, implementation and in-use phases during 2009 and the last is in 2012 when the model had been in use for more than a year. Interviews of key personnel in the six-city organizations took place at the end of 2009 to establish relevant clues from the accounts on the first attempt during the period of 1999 to 2000 to construct a benchmark model among the same organizations as well as to learn about the experiences with the design, implementation and use of the new benchmark model in this second attempt during the period from 2008 to 2012.

It should be noted that both the study of the six-city companies in this articles and the conclusions are likely to be influenced by interaction with the companies during the six-city project. Thus, both the project set-up and the nature of possible research questions suggests an interventionist approach (cf. Lukka, 2005), although there are variations, as interventionist research covers such methodologies as action research, and so-called constructive research approaches (Lukka, 2005, pp. 388-389).

In general, research cannot be carried out independently of the researchers' underlying assumptions about the nature of knowledge and how it can be acquired (cf. e.g. Andersen & Skaates, 2004; Guba & Lincoln, 1994). What are of more

concern here, however, are the factors influencing the research process and particularly the author's role as a visitor and observer.

When performing an interview, this personal interaction affects not only the interviewer but also the interviewee, and the knowledge produced in the interview affects our understanding (e.g. Kvale, 1996, p. 109), and hopefully both become wiser (Kreiner & Mouritsen, 2005, p. 173), which is most probably also the case here. Similarly, the author attended all meetings in the group for knowledge sharing (called ERFA-group) for benchmarking from 2008 to 2012, as a regular member of the group and not merely as an observer. Here it shall be noted the intention of the author's attendance to these meetings was more to gather information and to get familiar with the field, than to introduce new knowledge or to initiate change, although, any personal interaction will always be some sort of intervention. However, the impact of the intervention in this case study is judged to be of relatively minor significance compared to other activities and players within the field."

Table 3
Sources of the case study data

Source:	Type:	Date:
6-city meeting, observation 1	Detailed notes	16.03.2009
6 city meeting, observation 2	Detailed notes	21.04.2009
6 city meeting, observation 3	Detailed notes	18.08.2009
6 city meeting, observation 4	Detailed notes	06.10.2009
6 city meeting, observation 5	Detailed notes	24.04.2012
Interview w/Manager of 6-city organization A	Taped/Transcribed	02.11.2009
Interview w/Manager of 6-city organization B	Taped/Transcribed	04.11.2009
Interview w/Manager of 6-city organization C	Taped/Transcribed	19.02.2010
Interview w/Manager of 6-city organization D	Taped/Transcribed	02.11.2009
Interview w/Manager of 6-city organization E	Taped/Transcribed	05.11.2009
Interview w/Manager of 6-city organization F	Taped/Transcribed	06.11.2009
Interview w/Manager of 6-city organization A	Taped/Transcribed	21.05.2012
Interview w/Manager of 6-city organization B	Taped/Transcribed	13.06.2012
Interview w/Manager of 6-city organization C	Taped/Transcribed	14.05.2012
Interview w/Manager of 6-city organization E	Taped/Transcribed	21.05.2012
Interview w/Manager of 6-city organization F	Taped/Transcribed	25.05.2012
Interview w/ department manager, Danish district heating association	Taped/Transcribed	18.02.2010
Interview w/ department manager, Danish Energy Regulatory Authority	Taped	05.03.2008
Interview with managers in nine Danish district heating companies	Taped	Marts 2008
Agendas and Minutes of Meetings from 6-city meetings	Written information	2008-2012
Attending informal meetings, lunches, discussions, etc. in the sector	-	2008-2012
Archival data: • Annual reports • Laws • Regulations • Articles • News	Written information	2008-2012

The study falls into both the explanatory and the descriptive case study taxonomies as the objective is twofold, to describe the six-cities' strategic responses to institutional processes and to interpret the findings in light of the theoretical

framework of Oliver (1991). In this *longitudinal case study* my role as a researcher has been as a *visitor* (Scapens, 2004, p. 264). Regarding the six-city organizations I have been attending their six-city benchmark meetings as an *observer* where key personnel from all the six companies have participated, and as an *interviewer* interviewing the same key personnel in the six-city organizations separately.

Apart from the above I have met and talked to members in the various district-heating organizations at a multitude of informal occasions during seminars, lunches, or professional arrangements during the timespan from May 2008 to December 2012. Even though I have not been directly involved in the issues being researched it is clear that we have had a mutual impact on each other in one way or the other (cf. Scapens, 2004, p. 264).

As the identity of the interviewees are considered not to be of importance for the reader to know their names are not revealed, nor are their companies and therefore being referred to as 'Manager A' or 'Company A, respectively. To keep track of the development over time the naming of the companies as well as the interviewees will be consequent in the different phases.

The central empirical material to be reported hereafter is the data from the two sets of individual interviews. The data from the Interview 1 and Interview 2, collected from managers of the six organizations (or sub-units), are presented at group-level as a result of cross-case analysis on the basis of within and between the sub-units. When a manager is quoted it is regarded as representing the overall or general opinion among the sub-units. If any manager has expressed an opposing opinion to other sub-units, or represents a unique but important contribution her opinion is explicitly expressed as not being representative. The data stemming from interviewing the six-city managers, collected at individual-level, is presented as similarities and differences across the companies explicitly in light of Oliver (1991). The six-city managers have all read this article and accepted the use of their quotes and viewpoints.

3.2 Critical reflections to data sample and collection

The overall aim of this article has been to provide some answers to managerial responses to institutional pressure from regulators for benchmark re-regulation. However, due to the methodological choices made and the specific focus of the article, a number of limitations have to be taken into account.

First of all, this case-based article is of course, limited in the sense that it only considers some of the relevant actors. Only a few employees and managers have been interviewed, and the interviews have not been carried out at multiple sites within the organizations. Nor have customers or other stakeholders been interviewed. Doing so might have altered the conclusions in ways that would not

have been possible to control for in this article, and would have necessitated another research setup.

Secondly, this article is subject to the limitation that it only focuses on managerial responses. Given the importance of the practical use of the benchmarking model, new insights could be gained from following the implementation more closely regarding the attitudes both of those who do the accounting and those who use the output at board level, as well as of employees.

Similarly, this article only investigates six organizations. The significance of the factors that predict strategic responses could therefore gain from extending the study – both to the whole organization and to more companies, within the same sector and in other sectors.

The six-city companies are, on the other hand, actively pursuing a common benchmark model within the sector representing an extreme or unique case or what Yin (2003, p.41) calls a 'critical case'. In this way the six-city organizations were easy to identify, as opposed to randomly select some of the other 400 district-heating companies.

Although large the six companies are all somewhat dissimilar Danish district-heating companies, such as, for example, with regard to type of fuel, customer base and localization. Scapens (2004) state that somewhat 'dissimilar' organizations in a similar institutional field may provide deep and rich research perspective and thereby contribute to the debate on drivers for management accounting change in organizations.

In retrospect, more interviews over a longer period might have given a more balanced view, since it would have given more room for longitudinal aspects of the research themes. However, it can only be speculated what such interviews might have added. In principle, more comprehensive data could have strengthened the conclusions by improving reliability. On the other hand, more factors could be changing over time, thus weakening the conclusions.

4 EMPIRICAL FINDINGS

The empirical data is presented in the following five sub-sections where reference is explicitly made to Oliver's (1991) five predictive factors shown in Table 2.

4.1 The cause of institutional pressures

One of the causes of institutional pressures is related to legitimacy, and for example Manager A explicitly mentions in 2009 how he anticipates his board of directors to question the use of resources and consequently the level of prices relative to others when regulatory benchmarking becomes reality or the press presents price comparisons:

> *Then we can show our politicians or board of directors that we have performed benchmarking and found some areas where we are bad performers and have an explanation. (Manager A)*

When asked in 2009 if they actively use the benchmark results the same manager answers 'no, we don't' and the anticipated use of results from the benchmarking exercise could be interpreted as a future legitimacy-seeking towards superiors. Later, however, when interviewed in 2012 the same Manager A tells that the six-city benchmarking now 'form a part of our strategic planning' being evaluated on a yearly basis, which could be interpreted more inclined to efficiency-seeking.

Manager B told when interviewed in 2009 that 'how we ranked in the benchmarking attracted attention throughout the organization' but when asked in 2012 if benchmark results are shown to others Manager B answers that 'I show them to my superiors and then we discuss the numbers'. Manager B clearly states that 'to set a target as a specific ranking number in the benchmarking is not a good idea', but rather 'to use benchmarking to see how you are performing compared to others and thereafter find out how they achieve better results'.

Manager C has already been exposed to the following question from the board: 'How many kilometers of distribution pipes relative to the total network have you renovated?' where the manager refers to the use of benchmarking results and explains:

> *We are at bottom level, and I have a board accusing me for spending too much. Which is certainly not the case compared to others. Then such as this is a good thing to have. (Manager C)*

This response describe not only the will to use benchmarking to demonstrate relative economic efficiency towards stakeholders, but also that there could be a conflict between pressures to demonstrate (short-term) efficiency and impact on (long-term) quality of service.

According to Manager B the rationale behind the second attempt to make voluntary benchmarking among the six-city organizations was threefold from his point of view: Firstly 'to make some key figures as a good example for all the other Danish

district heating companies', secondly is concerning efficiency 'to find out how we spend our money compared to the other five', and lastly concerning legitimacy 'to show authorities the sector is proactive'.

The above indicates that the potential of legitimacy and efficiency gain could be considered high and therefore the strategic response is acquiescence, but the history of the six-city group concerning a previous benchmarking attempt is also interesting to visit as the last benchmarking exercise performed by the six-city group approximately ten years ago in 1999 was meant to be confidential, but according to Manager B numbers were revealed and used by most of the participants to promote their own organizations at the expense of the others towards the public. Due to political adjustments of the benchmark results at the individual companies to make a good appearance the conflict got so harsh among the six-city participants, they had to agree on plural rankings so anyone could look good.

The same happened to the ERFA group for benchmarking recently, or as Manager C put it:

> *The ERFA group has stalled, because if you shall find and agree upon which key figures to use there will never be consensus. (Manager C)*

Additionally, the work on the benchmarking model in 1999 could only be used to show ranking, but not to answer 'why'. This time in 2009 the terms of reference is different, as Manager B as the chairman of the six-city benchmark model project takes the background for the conflicts in 1999 into consideration and therefore 'the purpose now is to understand *why*, and to become more efficient and therefore the results from the benchmarking must remain confidential to avoid political moves among the participants'.

Another important issue regarding efficiency is to show the importance of reinvestments not only to superiors, but also to the Danish authorities. If benchmarking is concentrating on relative cost level, reinvestment will be sacrificed as it contributes only with costs in the short run. According to Manager A and B the neglect of reinvesting in the distribution network will sooner or later lead to an un-repairable collapse. The societal impact will obviously be enormous to Danish society, as the collapse most likely will occur at peak delivery in cold periods. Substitutes as fireplaces or electrical space heating will not be an option as chimneys are normally saved away and capacity of electric production as well as the Danish electricity infrastructure network is insufficient for large-scale space heating to replace district heating.

According to Manager A the issue of investment is also valid for back-up capacity, which concerns safe delivery in emergency situations where main source of heat is shut down for any reason. In the long run, negligence of reinvestment in

distribution and/or investment in back-up capacity will give the impression of district heating being obsolete, old fashioned and unstable and have detrimental effect on the reputation and legitimacy of the whole sector.

Manager B also mentions another issue regarding efficiency as well as legitimacy in the public, as the price for district heating is set to cover the costs according to the existing 'cost-of-service' regulation. Hence, the price shall cover all costs concerning the administration, production and distribution related to district heating, but additionally, the prices shall cover taxes and levies. Manager C and D both mentions that the new levies amounting to 15% in force for all Danish district-heating companies after 1st of January 2010 will obviously leverage the total bill to their customers.

According to Manager D the direct consequence from the new levies in his organization results in an increase of DKK 50 million, which is almost the double of the staff salaries of DKK 30 million. And similarly if Company D managed to save 15% of their staff salary the impact on the total heating bill would be less than 1%. Therefore, the potential to reduce the heat bill through efficiency measures is limited, according to Manager B, because of the relative size of taxes and levies to operating costs. But nevertheless, the out spelled challenge for Manager B at least, is to lower their controllable costs and to extend their business due to increased competition, as there must be something to harvest regarding efficiency other things being equal.

Summery of section findings

One of the 'causes' of institutional pressures is related to legitimacy, and the six-city managers anticipate their board of directors to question the use of resources and consequently the level of prices relative to others when regulatory benchmarking becomes reality or the press presents price comparisons. Additionally, by performing this voluntary benchmark project they are also demonstrating the sector is proactive in this regard towards the authorities. To demonstrate efficiency, being the second 'cause', is also important for the sector being regulated as 'cost-of-service', to show they manage the controllable costs in an efficient way (short run), and the importance of reinvestments (long run). So, the six-cities' gain regarding both 'Legitimacy' and 'Efficiency' is High (cf. Table 2), and therefore their strategic response to the institutional pressures is to 'Acquiesce'.

4.2 The constituents of institutional pressures

The constituent multiplicity imposed on the sector is high, as they have to comply with many institutional pressures from many constituents, often in conflict with each other. When looking at pressure coming from authorities alone, the multitude of requirements, laws and regulations necessary to run a district heating business

are too heavy a burden for the smaller ones if they are to comply with all, or as Manager A puts it:

> *There is an ocean of items to be reported to the (Danish energy) agency, where the smaller ones are more like happy go lucky. (Manager A)*

But as the gas prices are going up and down and it is challenging to be a smart buyer, they can be unlucky and stick to bad long-term contracts. And additionally as manager A puts it:

> *When in a district heating board of directors, you don't get paid. Perhaps the member doing the accounting gets a small symbolic compensation. Then there are all these requirements from the authorities: reports and… if you don't respond, there will be reminders. And now everyone has to comply with the energy-saving program and make reports, and they don't bother. It isn't fun anymore. (Manager A)*

Municipalities typically own the larger district heating companies, having a board of directors being assigned politically or professionally, or both. Certainly the resources, willingness and execution are of another quality than in the smaller district heating companies. This results in a more proactive attitude also impacting the management and thereby the employees, or like Manager D puts it:

> *There is a kind of self-regulating mechanism in this, a kind of administration of justice as you have the newspapers, journalists and your board, and at the end of the day you have the customers, every time you raise the price… then you should have your argumentation in place (Manager D).*

The same goes with the issue of benchmarking, but as long as it is not published and the authorities are not using it for institutional pressures as regulating measures, the companies can use benchmarking to learn from. But where it really matters is where the municipalities are owners. As many of them supply services as water, sewage and district heating these was previously contained in one municipal entity, but the water supply part is now separated into a limited company according to the new Danish Water Act. Many municipalities took therefore the opportunity to do the same with the district heating part while at it.

The Danish District Heating Association is also an important constituency in the organizational field playing an important role as institutional changes iterates through practical processes. These are actions taken within the existing framework of understandings, norms and rules serving to reproduce status qua, or even to stimulate change. A pertinent example of this is the Standardized chart of accounts with guideline prepared for the associations' members to test out and use, which

also Manager E expresses, when asked why the six-city coalition voluntary started the benchmark model project:

> *It was because, we didn't find the solution from the Danish district association practically applicable for us to use. (Manager E).*

For the six-city organizations their board of directors also represents a natural but also important constituent factor. According to Manager A he is supposed not only to present performance results, but also to present the new benchmark results from the six-city network benchmarking and how these relates to the targets set in the overall strategic plan. Together with other institutional constituents like the tax authority, regulating authority and professions they impose a variety of expectations and requirements on the district heating organizations also within the area of accounting.

For the taxation authority they shall prepare a financial statement and a tax statement. For the regulator they shall present a budget and an income statement based on a particular set of rules knitted together for the district-heating sector. For the owners they shall prepare an annual report. These are the mandatory ones. Additionally, there are also other reports to be made for example as management accounting for the daily operation of the organizations as well as reporting to the board of directors.

Another pertinent subject related to the above is the treatment of depreciation when accounting towards the different constituents. There is a multitude of different possibilities to comply with the constituents, and plenty of room for defining and adjusting depreciation to suit the different interests of the district heating companies. As an example of this is found in the Heat Supply Act, where district-heating companies to comply shall depreciate all investments, but are free to decide the period to be from 5 years up to 30 years, and likewise free to choose annual depreciation from 5% to 20%. One obvious consequence, pointed out by all the six-city managers, is to agree upon a common set of rules for depreciation.

The Danish district-heating sector as a whole is not dependent on the government as such. Of course they have to attend to rules and expectations, but as long as they deliver the service and keep the customer happy and comply with the authorities in general, the sanctions towards the sector are limited, and according to Manager B:

> *If for example they go too hard on the smaller ones, the generally underpaid employees will probably quit, leaving the owner-customers as well as the authorities in an awkward situation. (Manager B)*

Altogether this leaves plenty of room also for the smaller ones to navigate among various ways to resist institutional pressures, as the authorities have very few possibilities for sanctions, which also is in line with Oliver (1991, p. 164).

Summery of section findings

One of the 'constituents' of institutional pressures is related to multiplicity, and the constituent multiplicity imposed on the sector is High (cf. Table 2), as they have to comply with many institutional pressures from many constituents, often in conflict with each other. For the six-city managers their board of directors represents an important constituent factor. The Danish District Heating Association is also an important constituency in the organizational field playing an important role as institutional changes iterates through practical processes. Together with other institutional constituents like the tax authority, regulating authority and professions they impose a variety of expectations and requirements on the district heating organizations also within the area of accounting. Regarding dependence, being the other predictive factor, Danish district-heating sector as a whole is not dependent on the government as such as long as they deliver the service and keep the customer happy and comply with the authorities in general. In other words the dependence is Low (cf. Table 2). The six-cities' strategic response according to these two predictive factors are therefore to Defy or Manipulate.

4.3 The content of institutional pressures

When authorities make performance rankings, it is of course pertinent to have a sufficient degree of consistency in their evaluation and monitoring. The high level of service customers are accustomed to in Denmark is also in consistence with Oliver (1991, p. 167) stating that non-profit organizations may be more resistant to efficiency pressures as these pressures might be inconsistent with the goal of high service quality. The regulative pressures for efficiency could thus jeopardize the organizational goals of maintenance to keep a sufficient service level and eventually lead to a collapse, or as Manager B puts it:

> *What is my concern is how governmental benchmarking could lead to efficiency by neglecting maintenance, to stop renovating and things…and then keep on until it all falls apart and then tell the authorities: Now we will find another job! (Manager B)*

This indicates that if the inconsistency between the regulator and regulated is not taken into consideration the institutional pressures would not have a positive impact on the sector, and further:

> *If the authorities make regulation to increase efficiency, it is extremely important they look to reinvestments, average age, and a whole lot on*

> *how you maintain, to set certain parameters to monitor maintenance. (Manager B)*

This expression indicates that, if the above is not taken care of, the organization with the lowest level of maintenance will excel in a benchmark regulation other things being equal which seems a quite realistic consequence from a resource dependent point of view.

Apart from the above the constraint authorities put on the sector especially concerning the choice of energy for heat production is by many felt severe. The direct impact of this is not only the premium prices they have to pay because of perhaps having to use an inadequate source of energy, but also the taxes and levies that come on top. Apart from making a major part of the customer's bill, the pressure is certainly also on the employees as they cannot escape the economic constraint by switching to another source of energy being less burdened with taxes or levies, as this is prohibited by Danish law.

Another emerging constraint is the promised benchmark regulation in the sector, as this will require the companies not only to report, but also to adopt some sort of standardized chart of accounts as the one originating from the Danish District Heating Association. According to Manager C the implementation of such a model requires the companies to dig deep into their accounting, which again requires resources and know-how and top management acceptance:

> *It isn't that easy to start up you see. You might say, - if everybody converts to the Standardized chart of accounts, then it would be easier just to extract. We have spent a lot of work. The smaller ones doesn't have such resources as the six-city members to make all this…they just don't have the resources we have to make all this and make it work. They shall have someone to help them. (Manager C)*

The initiative by the Danish District Heating Association to prepare for re-regulation could be seen as a will to take lead in establishing corporate financial standards, because otherwise they feared the authorities would simply impose a set of rules on them (Oliver, 1991, p. 167), but the quote above could be one of the answers to why benchmarking isn't interesting for the majority of members anymore. The resource dependence aspect is interesting, as the very lack of adequate resources to adopt the standardized chart of account in an appropriate way hinders the smaller companies from preparing for the announced benchmark re-regulation, or as Manager C put it:

> *If you don't have these resources in a company, you cannot do this. Then maybe the Danish District Heating Association shall help in making these tools, so it is just for the companies to push the button to*

> *establish the results. That lacks, I think. If you are a company with only 6-8-10 employees or such, they can't figure it out. It's only the larger cities that can do that. So there must be prepared some simple tools just for them to promptly deploy. (Manager C)*

Again the common responsibility of helping the smaller ones that do not have the requested resources is highlighted as a solution. And when things are difficult, and the institutional pressures are low, the easiest reaction is to do nothing, or to stay as invisible as possible.

Anyhow, many smaller or mid-sized district heating companies have adopted the standardized chart of accounts, not for preparing for benchmark re-regulation, but simply to take use of the accounting system offered by the association that has also offered numerous courses in how to apply and use the system. As almost 50% of member organizations have come to use the system, it could be seen as a success. But adoption of the system is not the same as adoption of it in a similar way, which is a prerequisite if data extracted across organizations is comparable, which is the intention from the association on behalf of its members, or as Manager A puts it:

> *One of the preconditions to make benchmarking, real benchmarking, that is you do your accounting in the same way, that is you have a chart of accounts, and you agree upon how to account the costs the same way, or else it's difficult to benchmark, you compare apples and pears, so that's why the Danish District Heating Association has made the Standardized chart of accounts (Manager A).*

To find out how member organizations have implemented the system a study was performed in 2011 by an external body (BDO, 2011). Ten member organizations were chosen by the association as comparable in size. Results showed large variations among the organizations not only in how the accounting manual was interpreted and implemented, but also how the existing laws and regulations were interpreted (BDO, 2011, p. 5) not only regarding allocation of costs, but also among costs and investments.

The above could indicate behavioral differences between the smaller and the larger organizations, but from a more general view the district-heating companies are, after all, already deeply predetermined by government or legal mandate, locked-in by important issues like pricing, location and technology. Thereby the sector as a whole possesses less room for responding to forfeiting autonomy than sectors being more prone to competitive moves (Oliver, 1991, p. 167), leading to a limited resistance towards loss of discretion.

Summery of section findings

One of the 'contents' of institutional pressures is related to consistency, and as Danish district heating companies are non-profit organizations the institutional pressures might be inconsistent with the goal of high service quality. If that is the case, the degree of consistence will be Low. Regarding constraints being the other 'content', district heating companies are heavily constrained as to for example service selection, resource acquisition and resource allocation, so the degree of constraint is High. The six-cities' strategic response according to these two predictive factors are therefore to 'Defy' or 'Manipulate'.

4.4 The control of institutional pressures

The authorities have promised the sector to be exposed to benchmark regulation already from 2009, as a fulfillment of the 'Efficiency-report' from the Danish energy agency in 2007 (Danish Energy Agency, 2007), but as Manager A put it on behalf of the rest of the sector:

> *They have abandoned it you see. Therefore, when there is no coercion, we are doing this on a voluntary basis. And maybe to be a little prepared to see where we are in case of the coming of a real benchmarking. (Manager A)*

Apart from sitting still and doing nothing related to benchmarking the Danish district heating companies in general are trying to comply with the procedures towards authorities as well as the Danish District Heating Association to promote the appearance of compliance to specified rules and requirements to reduce the degree to which they are scrutinized by the regulatory agencies (Oliver, 1991, p. 168). Practical indications of this can be seen in the yearly statistics published by the Danish District Heating Association as a brochure called 'Benchmarking statistics'. Although Manager D commented that:

> *This brochure has nothing to do with benchmarking for me to see. It is more like a sector statistics…It doesn't say anything, if you are good or bad. (Manager D)*

Manager D also points to the fact that the statistics cannot be used by anyone to see how a district heating company is performing, which indeed could be interesting for others to see. Not only for the customers or the authorities to see, but also to let companies see how they are doing in comparison with others.

Regarding a future use of benchmarking for regulation Manager D say:

> *The problem is, if you get regulated, the regulator might say: "You shall save 5% on administration or on the total". If you then have done your*

> *accounting wrong or different, then you will start moving around with the data, or you haven't understood the accounting guidelines correctly, and therefore you look bad on one point, and is asked to be more efficient, but in reality you have only done your accounting wrong. (Manager D)*

Because of this Manager D states that the six-city members will gladly help the Danish District Heating Association to make the accounting guidelines more precise but 'it won't get better than the person doing the accounting and allocation of costs' (Manager D).

In addition, to the large district heating companies there is a group of medium-sized and a group of smaller district heating companies, but these are only communicating on an ad-hoc basis. An exception to this is the ERFA group for benchmarking administered by the Danish District Heating Association, which is a knowledge-sharing group open for all members to join. This is quite in line with what has been the case for the Danish electricity companies, and according to Manager D:

> *They had knowledge groups and met across the board and exchanged information with each other without prejudice, you see. But when the electricity got liberalized, and they should start trading in all directions and also compete with each other also on energy-saving, then they closed down completely towards each other…it has destroyed their knowledge sharing, those good and bad experiences people make and share with others, it's not sure they are interested in doing that any more. (Manager D)*

This is also in line with Manager B when asked about how they do within the electricity sector when someone looks bad in the benchmarking and they could do with help from others to find out why, and eventually how to solve the issue:

> *They hold their cards tight. They will never let them in. Well, that is harsh and cynical. They don't talk together. (Manager B)*

This is strongly indicating the fear for what will happen if and when institutional pressures from the government to make use of a benchmark model to re-regulate the district-heating sector or as expressed by Manager B:

> *Then I think knowledge sharing and diffusion will stop. Then we'll be competitors. (Manager B)*

According to Oliver (1991, p. 167) highly institutionalized organizations like hospitals employ certified personnel not to compromise their legitimacy and viability. As for district-heating sector this is also the case for medium sized and

large companies, but not for the smaller ones. Here the salary costs are more important than legitimacy and viability, and the daily business and operation is often taken care of by a board member or a capable retiree. Although the Danish District Heating Association is trying to help diffusion of sector specific technical and administrative issues, this can never replace certified professionals. The level of diffusion is by itself also involved and according to Oliver (1991, p. 169) when the degree of voluntary diffusion of norms and practices in an institutional environment is low, organizations will be less likely to conform to these norms and practices.

This seem somewhat contrary to another conclusion by Oliver (1991, p. 167) stating that where constraint already have been predetermined by the authorities on pricing, location, and technology there is less latitude for responding to loss of autonomy. Additionally, there is a consensus among the six-city managers of a limited manpower exchange among organizations within the sector, and therefore diffusion should find other ways as pointed out by Manager D:

> *Benchmarking could be a way, or the ERFA groups. That is also how we use those groups today in a way. If you have a good idea on some issue, most of us are damn happy to tell others. That is how it has been up to now. (Manager D)*

This is also given as an explanation why some district heating companies are well run, and some are not. If they don't co-operate with each other, the good ideas don't diffuse among them, which is important especially if you are a smaller company and according to Manager B 'the smaller ones they don't have the same possibilities, as they don't have these competences', which is naturally and quite obvious from an 'economy of scale' point-of view.

The dilemma for the six-city participants is obvious but intricate: on the one hand they are preparing and developing a benchmark model to be well prepared for the coming of a regulative benchmark model, but also 'to try to influence this upcoming regulative model as much as possible' as Manager E puts it, and further 'the more companies using our model, the smaller the risk for us to change it'. But Manager E also mentions other members of the six-city members saying 'we go ahead but should keep it for ourselves. The more the model is diffused in the sector the easier it will be for the authorities to say: OK here it is and let's just apply it' and by that indicating skepticism to laying the ground for enhancing regulation.

But, as there is consensus among the six-city coalition to make their benchmark model as well as the updated accounting guidelines available for both the Danish District Heating Association but also for other district heating companies directly, it is challenging to believe the sector can hide the model from the authorities even if they wanted to.

Summery of section findings

One of the 'controls' of institutional pressures is related to coercion, and as Danish district heating companies have not yet been exposed to the promised benchmark regulation the six-cities are performing the voluntary benchmark project to stay ahead of regulation, unlike the rest of the sector. So, for the time being the coercion is Low. Regarding diffusion, being the other predictive factor, there are challenges with diffusion of institutional norms, values and practices within the sector. This is because of limited manpower exchange among organizations, although the Danish District Heating Association is trying to help diffusion of sector specific technical and administrative issues, so the diffusion could be regarded as Moderate. The six-cities' strategic response according to these two predictive factors are therefore to Avoid or Defy (cf. Table 2).

4.5 The context of institutional pressures

Regarding *when* the regulative benchmark model will be applied in the Danish district-heating sector and *how*, is an issue of high uncertainty at least for the district-heating companies themselves and also their association. As there is no signs yet of such a regulation the strategic response of acquiescence makes no sense, but avoidance does. After an initial interest for benchmarking when the authorities rattled their sables in 2008, the general and pronounced interest has vanished. From having a overwhelmingly interest for the event called 'Benchmarking around the clock' (Danish: Benchmarking-døgnet) in 2008, there were absolutely no interest for the same in 2009.

The abandoning of the 'Benchmarking around-the-clock' in 2009 coincided also with the resigning of the chairman of the ERFA-group for benchmarking, and a new chairman was elected on the 7th of May 2009. The first decision made was to postpone next meeting until 'sometime next year', or as was written in the minutes from the meeting: 'Not yet decided. Either in a year, or when a relevant situation occurs'.

From having frequent meetings in the ERFA-group for benchmarking up to 2009, these meetings are now hardly being scheduled because of lack of interest. And indeed, in the time up to 2009 when the Danish district association managed to engage their members on this issue, it soon became apparent for all interested the difficulty in reaching a reliable and valid benchmark and the resources needed to do so. Each and every of the above reasons could have had an impact on the interest for benchmarking within the sector, but the overall result could be summed up as 'avoidance', except for the six-city coalition as they in the same period have gone the opposite way and acted proactively on the matter.

It should also be mentioned a project on regulation where an external consultancy is engaged to study various tools of regulation including a "Workshop on future

regulation of the district-heating sector" in February 2011, and a meeting in August 2012 called "Theme-day on regulation" all arranged in cooperation by various actors within the utility sector including the Danish District Heating Association. Apart from this the sector itself is highly interconnected as almost all Danish district-heating companies being a member of the Danish District Heating Association, attending courses and interrelating especially on technical matters. For example the yearly national get-together (Danish: Landsmøde) gathers more than 2.000 members of the Danish District Heating Association as well as suppliers to interrelate and to be updated on relevant topics serving also to keep members interconnected.

There is great uncertainty within the sector concerning a future regulative benchmark model, its design, implementation and use. The strategic response according to Oliver (1991) would therefore be a low level of resistance. Even though the six-city benchmark has been going on for approximately five years, the attitude among the participants towards the regulators seems unchanged, and is still positive in 2012 where they met to exchange experience from the use of the benchmarking model in the respective six organizations. Although the previously observed general level of knowledge and confidence related to economic terms and language among the six-city participants has changed from being uncertain on issues concerning the accounting guidelines from the Danish District Heating Association to become confident on the same matter.

Both institutional and resource dependence theorists suggest that interconnectedness facilitates the voluntary diffusion of norms, values, and shared information, which could explain why the six-city members have chosen to perform this benchmark model exercise despite the authorities not coercing them in this regard, at least for the time being and as Manager A state:

> *We have chosen, -because we have such a good cooperation within the six-city members, to make a six-city benchmark. (Manager A)*

The same interconnectedness is also present for the rest of the larger district heating companies in Denmark, also being organized in a formal group, namely the group of larger district heating companies where the total number is 12 (including those in the six-city coalition). As mentioned earlier the six-city coalition is an old constellation of organizations owned by the municipalities, and they work across the board in many instances within public administration, and according to Manager D it is 'all the way through the system, both politically and administrative, that they have co-operated in all directions. This has resulted in district heating also becoming a part of the co-operation, which we have carried on. So in this (six-city) group we already meet on a regular basis'.

Summery of section findings
One of the 'contexts' of institutional pressures is related to uncertainty, and there is great uncertainty within the sector concerning a future regulative benchmark model, its design, implementation and use, resulting in uncertainty is High. Regarding interconnectedness, being the other predictive factor, the six-city members are interconnected as being members of an already existing formal network, namely the 'group of larger district heating companies'. This interconnectedness facilitates the voluntary diffusion of norms, values and sharing of information, and could therefore be concluded to be High. The six-cities' strategic response according to these two predictive factors could therefore be to Acquiesce or Compromise (cf. Table 2).

5 Discussion

When the expectation is that of being exposed to future benchmark regulation a natural response could be to prepare for it given the resources are available for doing so. This study show that when organizations already have an established and operating network it is even easier to carry on with a network benchmarking taking advantage of direct interaction based on trust and communication. Network benchmarking among companies could therefore be regarded as both the rationale and the medicine to explain why companies enter into such collaboration. And while at it, it would also be obvious to analyze possible consequences and see if there is room to maneuver and to impact the future introduction of it.

The case study also shows how a particular network of organizations with uniform institutional logic is able to negotiate and agree upon strategies to reach a special form of benchmarking practice namely network benchmarking (Kyrö, 2003, 2006) as a particular way of voluntary benchmarking (Bowerman *et al.*, 2002). But there are certainly additional issues and conditions impacting how organizations respond to institutional pressures as shown below.

5.1 Structure and legitimacy

One of the causes of institutional pressures comes from the expectations of conformity as social and economic fitness (Oliver, 1991, p. 161). Today, all Danish district heating companies are to reflect a certain prefabricated classifications of appropriate structure (cf. Meyer & Rowan, 1977) whether the organization is large with hundreds of employees or small with less than a person employed. This institutionalized structure is used for accounting purposes as the companies are to report their accounting numbers to the authorities according to a general template in

the form of a departmental structure being: Administration, Production, Distribution and Transmission (Danish Energy Regulatory Authority, 2007, pp. 1-2). The departmental structure could also be seen as part of the pressure to become more "business-like" and thereby indicate more economic accountability, which is according to Oliver (1991, p. 161).

The departmental structure used for reporting towards the authorities is negotiated and agreed between the authorities and the Danish District Heating Association and implemented into the association's standardized chart of accounts, offered to its members although at their discretionary use (Danish District Heating Association, 2008). Even though this departmental structure could feel inconvenient for the small organizations maybe counting only one part-time retiree, the companies belonging to the six-city group are all relatively large and could easily fit their personnel into the requested structure. The use of this departmental structure could also be seen as 'taken for granted' norms and beliefs of how the Danish district heating companies are organized around particular functions for the sake of legitimacy.

On the other hand it could simply be to adopt structures and procedures that are valued in their environment to achieve legitimacy, as is one of the key contentions of NIS. Although not-for-profit organizations in particular will, according to Oliver (1991), attempt to resist institutional pressure when anticipated legitimacy or economic gain is low. This could be the rationale for the majority of Danish district heating companies explaining the relaxed interest in voluntary benchmarking. Manager C also recognizes this challenge, although at a more aggregate level:

> *The ERFA group [for benchmarking] has stalled, because if you shall find and agree upon which key figures to use there will never be consensus. (Manager C)*

This could perhaps also explain why many organizations of various sizes within the sector have been found not to comply with sector-specific accounting rules and thereby also demonstrated misalignment with the regulation as shown in the survey by the Danish Energy Regulatory Authority (2009) on district heating companies in the county of Middle Jutland. This was confirmed in the BDO-report (2011) initiated by the Danish District Heating Association where they found prominent differences in how district-heating companies did they accounting, and especially with regard to allocation of overhead and other indirect costs, as well as depreciation and segregation between maintenance costs and investments.

The authorities on their side have met these irregularities amongst others with introducing 'naming and shaming' (Pawson, 2002) on authorities' homepages indicating that Danish public policy could be more occupied with poor performance than best practice (Johnsen, 2012) contrary to e.g. the Dutch authorities (Speklé &

Verbeeten, 2009, p. 36). The aspect of 'undeserved loss' (e.g. Jonsson *et al.,* 2009) could also be an issue for the six-city members, instigating a project as the benchmark model project, to show a proactive behavior.

5.2 Benchmarking issues

Regarding the practical use of the six-city benchmarking model it is implemented in the management accounting systems of all six organizations although communicated at different levels. Here it is used especially towards senior management and board of directors not only to explain and show relative position to the other companies, but also to show and measure internally the development on a yearly basis. In some of the companies the benchmark model is even used to pursue Key Performance Indicators (KPIs) for middle management, and has become an integral part of their management control system.

Despite the dominant negative experiences from the initial experimenting with benchmarking ten years earlier in 1999, the new benchmark model of the six-city members is by the involved organizations regarded as a prosperous candidate to improve financial control of operations as well as legitimization to external constituencies as the board as well as regulating agencies. This supports Oliver's (1991) hypotheses of both efficiency gains and perceived legitimacy as determinants of institutionalized practices. This is an example of more proactive behavior than anticipated as a more passive acquiescence is more likely to be the expected response to the adoption of more complex structural measures (cf. also Modell, 2001, p. 458; Abernathy & Chua, 1996).

The challenges the managers of the six-city members are up against are not only asking for efficiency improvements, but could also be categorized as legitimizing the organizational whereabouts to others or to increase prestige by demonstrating accounting fitness and preparedness as a *cause* (cf. Modell, 2001; Brignall & Modell, 2000). The aspect of social fitness is shaped by prevailing institutional logics where the six-city members have followed closely the development of the authorities' preparation for benchmark regulation for example as board members of the Danish District Heating Association, and through the involvement in other related sectors (Miner *et al*., 2003). It could also express a hope that this additional accountability could 'cause constituents to have higher confidence in their financial statements and their financial performance' (Guerreiro *et al.*, 2012, p. 495).

It is important to note that the initiative to this benchmarking model project comes from the top management in each participating six-city organization, each of which themselves takes an active part in the design, implementation and institutionalization phases (cf. Burns *et al.*, 2003). Management of the change process could therefore be viewed as taken care of, since the initiators are the same as the executioners and users, although results from using the new benchmark

model generally is introduced to subordinates as well as superiors. Another important issue regarding the process of designing and implementing the new model, the top management in each company also actively involves accounting personnel in early phases, as 'they are the ones which shall do the accounting' (Manager E).

Since the 6-citiy organizations are involved in many different sectors already being exposed to benchmark regulation, the 'contact with institutional logics in multiple and different organizational fields increases the awareness of and experiences with contradictions in logics' and 'enables central actors to become institutional entrepreneurs' (Thornton & Ocasio, 2008, p. 116), which again could explain why the six-city members take advantage of their access to resources (DiMaggio, 1988) and the causal powers of pre-existing structures (Leca & Naccache, 2006) to create a benchmark model for their district heating activities not only for themselves, but also to be offered to the rest of the sector through the Danish District Heating Association.

5.3 Issues concerning scope conditions

Findings from this study also contribute to the issue of scope conditions as potential barriers to proactive managerial maneuvering regarding resources. Resources play an important role in Oliver (1991) as in 'resource dependency' not only to establish hands on scarce resources, but also as a scope condition as inadequate organizational resources 'limit the ability to conform to institutional requirements' (Oliver, 1991, p. 159). Empirical evidence from this study supports that contextual circumstances rather than institutional antecedents are of great importance when resources are scarce and the request for resources is high in the individual organization not only to find ways to cope with the requirements, but also for financing the collaboration with others in the quest for finding a way to comply.

The above is the fact for the majority of the scattered and many small and medium sized members of the Danish District Heating Association. But, on the other hand the Danish district heating companies do have, at least in theory, access to unlimited resources, as they can raise the price to cover their costs according to the principle of 'cost-of-service'. Therefore, it is interesting to observe the very limited interest in, or willingness, to raise and use resources to design, implement and use a benchmark model on an individual level within the Danish district-heating sector as proposed and initiated by the Danish District Heating Association except for the six-city members.

Throughout the benchmark model project the six-city members demonstrates having the necessary resources to deal with the technical aspects of relative performance evaluation as described above, and even conclude that using the standardized chart of accounts to be necessary to perform this kind of

benchmarking. This could seem contradictory to accounting literature represented by Näsi and Rohde (2007), but it shall be remembered that the six-city members do not use the standardized chart of accounts only, but in parallel to their own accounting systems. The six-city members have also been through a series of iterations to *agree* and *negotiate* the meaning of the standardized chart of accounts and the accounting guideline from the association, as well as what to benchmark and how. They all claim in unison that the fundamental requirement of keeping the results *confidential* has made the benchmark project successful, as opposed to their last benchmarking effort ten years earlier. It shall be remembered that 'successful' is in terms of utility for the participants concerning learning aspects, and could certainly be defined differently if in the eyes of a regulatory body.

Regarding issues related to structure and size it is evident that there are huge differences among the sector's organizations. But there are also differences regarding ownership that play an important role, especially with regard to how the organizations are run and administered. Along a continuum the largest organizations are professional and employees are hired on full-time basis as a part of a multidiscipline team, and at the other end the organization consist of a more or less skilled user/owner in small co-operatives. This is not only the case in the more technical disciplines, but also within the accounting and management disciplines. This result in the smaller does not have the same potential to cope with the design, implementation and use of a benchmarking model similar to that of the six-city members, or any similar model requiring organizations to have adequate resources to agree and negotiate how to do the accounting being a seminal part of this type of benchmarking.

5.4 The standardized chart of accounts

Central to this study is the standardized chart of accounts and its present use in accounting in the Danish district-heating sector, to ready the ground for a just and fair benchmark regulation. Historically the concept of 'standardized chart of accounts' has been a critical and highly discussed issue in the accounting literature (see Näsi and Rohde, 2007). Such as, for example, demonstrated by the notion that 'the introduction of a standard chart of accounts will automatically solve all problems has – fortunately – gradually disappeared' referring to a discussion amongst accounting academics within the Nordic Countries in the 1950s and 1960s where standard charts could be seen as straitjackets were 'the most difficult task was to make the standard chart of account flexible enough to take the organization, size and other such issues into consideration' (Virkkunen (1961) cited by Näsi and Rohde, 2007, p. 1099).

The above is a particularly interesting topic as the Danish district-heating sector is recognized as being made up of highly heterogenic or 'bio-diverse' organizations (Danish Energy Agency, 2007, p. 8). This is due to factors like size, age, fuel,

technology, type of ownership, ownership of production capacity or back-up capacity as well as having the hot water coming from public waste-incinerator plants, combined heat and power plants (CHP) or excess heat from industrial processes. Size is also important regarding the dominant institutional logic within district heating organizations, or rather groups of district heating organizations. The above could therefore be a highly relevant topic for the sector to discuss as the standardized chart of accounts is planned to play a central role in the announced benchmark regulation.

This bio-diversity is expected to lead to differences where the larger ones are expected to function differently and more professionally than the smaller ones (Danish Energy Agency, 2007, p. 8) and hence resulting in different institutional logics and subsequent differing consequences across the organizational field[5] (see also Scott, 2008a, pp. 201-202), or as put by Manager B:

> *Sooner or later it [benchmark regulation] will also come to the district-heating sector, and surely there will be a model, but that is not the same as saying it will be a just and fair model…There will be someone having to do nothing, and others that have to shut down, because they can't make it work. (Manager B)*

It is, therefore, interesting to see how the standardized chart of accounts is referred to as important by the six-cities as a translation in their voluntary network-benchmarking situation where the meaning of key performance indicators are negotiated and agreed upon within the six-city network. In order to do this they must particularly *negotiate* and *agree* on how to allocate overhead and other indirect costs, as well as depreciation and segregation between maintenance costs and investments. Here it is important to note the six-city members use the standardized chart of accounts in addition, (or parallel) to their normal accounting system, and thereby will not introduce any conflicts in their normal accounting systems. In other words they are extracting accounting numbers from their normal accounting systems into the standardized chart of accounts, and then their numbers are benchmarked in their benchmarking model with the purpose of learning from each other, as they are also performing process benchmarking to understand their benchmark ranking.

[5] *As already mentioned in the introduction to this article the dilemma of using the standardized chart of accounts as template for doing cost-calculations in the various district-heating organizations is insisting to be solved by introducing another technology, which is outside the scope of this article.*

5.5 Regulation and learning

Whereas Knutsson *et al.* (2012) investigated municipal benchmarking networks and whether they lead to improvement or leveling of improvement, this study shows that improvement and even knowledge sharing among the participants may be a possible outcome. In the first attempt by the six-city network ten years earlier to employ benchmarking there were clear signs that 'poor performers blamed poor performance on exogenous factors or methodological flaws' (Knutsson *et al.,* 2012, p. ii). But in their second attempt there is no evidence or signs of such among the six-city members claiming this time that they are to keep ranking and results by themselves and not to be broadcasted. In other words, they claim confidentiality to be a prerequisite.

It is, therefore, important to distinguish when a standardized chart of accounts is used for regulatory purposes (i.e. financial accounting), or when it is used for management accounting, as it is currently used by the six-city members in their voluntary benchmarking project. This could serve as a practical example of the rationale behind Kaplan's 'One cost system isn't enough' (1988), as in the case when one accounting-system is used as a 'Swiss army knife' for financial reporting, regulatory purposes *and* management accounting. This thinking is suspected to coincide with using benchmark regulation for *both* regulation and governing *and* knowledge sharing and learning. This argument is also supported by the way in which a benchmarking exercise is performed, as when the authorities perform benchmarking in a compulsory way, the benchmarking is pursued in a vertical and competitive way, as is the case for benchmark regulation. This is opposed to when benchmarking is pursued voluntarily in a horizontal and collaborative way (see e.g. Cox *et al*., 1997; Knutsson *et al.,* 2012; Saunders *et al.*, 2007), as is the case for the six-city benchmark model project.

5.6 Benchmarking frameworks

When we revisit Cox *et al.* (1997) regarding the different features in the model concerning the competitive and collaborative aspects of benchmarking, it could look like Table 4 if 'Regulatory benchmarking' aspects are added using the same language as shown below.

	Framework		
Feature	Competitive benchmarking	Collaborative benchmarking	Regulatory benchmarking
Aim	Superiority	Learning	Control
Relationship	Competition/rivalry	Collaboration/partnership	Competition/asymmetry
Action	Unilateral, voluntary	Joint, responsive	Compulsory/multilateral
Image/metaphor	Vertical, reference point/standard	Horizontal, visiting	Vertical/comparison

Table 4 Expanded alternative frameworks of benchmarking (Inspired by: Cox *et al.,* 1997)

The Table 4 illustrates how aim, relationship, action and image differ according to the intended use of applying benchmarking. For example where the aim of competitive benchmarking is to gain *superiority* over others, the aim of collaborative benchmarking is to *learn* from others, and the aim of regulatory benchmarking is to *control* others.

Although several researchers claim that performance measurement is frequently an ineffective way to improve performance (e.g. Nørreklit, 2000; de Bruijn & van Helden, 2006), the popularity of relative performance evaluation, or benchmarking, appears to have increased (e.g. van Helden & Tillema, 2005; Braadbaart & Yusnandarshah, 2008; Johansson & Siverbo, 2009). According to Guerreiro *et al*. (2012, p. 496) organizations actively choose the pressures to which they want to comply, when being faced by institutional pressures of diverse strengths. Hence strategic response is motivated by organizational agency although moderated by institutional logics (see Thornton, 2002), and additionally, when the legitimacy seeking and the efficiency enhancing rationale is closely interwoven it will prompt the adaption of a new system (Modell, 2001) both of which holds valid for the six-city members.

5.7 Divergence vs. Convergence

When organizations are exposed to regulatory pressures it should according to DiMaggio & Powell (1983) lead to convergence, but could also produce divergence (D'Aunno *et al.,* 2000) when firms respond differently. This last is also the focus of Oliver (1991), as to how strategic responses of organizations to institutional pressures differ. According to Sine *et al*. (2005) learning could also be learning from the experience of other firms, and on a more macro perspective whole industries can learn from other industries (Miner *et al*., 2003). Thus learning from another population in response to regulation can also lead to change in the institutional environment.

Variations in actor responses to the same institutional environment can produce greater heterogeneous, rather than homogenous, outcome (Oliver, 1991) which is seen as a very important area of future research (Haunschild & Chandler, 2008). In this study it is evident that the six-city members both learn from own experiences with benchmarking and from each other, and since they are forming part of larger organizations involving other sectors, they also learn from these sectors. At the same time, the small and smaller district heating organizations does not have these same opportunities, and thus regulatory pressures on the sector is expected to lead to greater heterogeneity.

5.8 Institutional antecedents and predicted strategic responses

Before entering into discussion of how the predictors indicate the strategic responses from the six-cities, it is important to remember the role of scope conditions. Oliver (1991, p. 159) states that the scope conditions under which organizations are willing to conform are bounded by organizational skepticism, organizational capacity and control, and self-interest. In this particular case, it is also important to have in mind the re-regulation of the Danish district-heating sector is only announced, and not put into force.

For the six-city organizations it depends on whether their benchmark model project is seen as coping in an acquiescent way to institutional pressures or being a way to manipulate the way benchmarking regulation should, or could, be performed in the future. Anyhow, the practical execution of the benchmark model project has given an edge to the six-city members, if or when a re-regulation containing benchmarking is established. When the 'rules of tomorrow shall be forged' it is obvious that the six-city members has an advantage over those not being prepared and they are well positioned due to their size and resources. Such an effort as demonstrated by the six-city members could therefore also be an expression of desire to influence the future content of re-regulation (Guerreiro *et al.*, 2012, p. 486).

The study reveals little evidence of radical change proposed by Oliver (1991), which is not surprising in a highly institutionalized field like the Danish district-heating sector (Greenwood & Hinings, 1996). Additionally, the six-city members experience a relative low level of operational risk and therefore appear to be more confident in engaging in a demanding process as the benchmark model project has demonstrated. The acquiescent strategies are also associated with a high connectedness with environment and solid cooperation among firms in the same industry 'because organizational interconnectedness promotes collective identity, institutional logics prevailing within these organized industry groups specify the appropriate accounting practices' (Guerreiro *et al.*, 2012, p. 496).

On the other hand, such *compliance* with institutional pressures should only be expected in circumstances where they: expect both legitimacy improvements and economic gains from the adoption; operate in highly interconnected environments that facilitate the building of consensus among adopters; believe they can achieve their goals using benchmarking and that the use of this system impose fewer discretionary constraints than the alternatives (Guerreiro *et al.*, 2012, p. 486). All of these seem to be fulfilled for the six case organizations, so the benchmark model seems to be deployed not only for efficiency seeking purposes, but also for legitimacy seeking purposes.

6 CONCLUSION

To conclude, we have first of all demonstrated how the framework of Oliver (1991) reveal strategic maneuvering in a regulated utility sector when exposed to institutional pressures, and how the same framework assist the contribution to benchmarking literature through empirical findings. We have for example demonstrated how the sector have defined and structured their activities around particular functions as administration, production and distribution on the one side, and the matter of operational costs (opex) and capital cost (capex) on the other. This prefabricated 'appropriate' structure is applied independent of the size of the organizations. As the authorities intend to use the structure for benchmarking the performance of the organizations, the definition and understanding of accounting rules and guidelines become important. Thus the scene is set for strategic responses.

Secondly, we have identified that, in a relative performance evaluation context, the availability of *adequate resources* available in the regulated organizations to *agree* and *negotiate* the meaning of accounting numbers and their definition, is a critical factor in a relative performance evaluation context. Additionally *confidentiality* is a factor that significantly influences the chances to perform a successful benchmarking project with regard to aspects of learning.

Thirdly, we argue that when benchmarking shall be used for *learning* this must take place as a horizontal and collaborative network where the 'benchmarker' and the 'benchmarked' are the same. This is opposed to when benchmarking is aimed at achieving control as in regulatory benchmarking, as this takes place in a vertical way. Here the relationship between the 'benchmarker' and the 'benchmarked' companies are that of information asymmetry where the 'benchmarker' imposes a competitive relationship to the 'benchmarked' companies to make them strive to climb in ranking at the cost of others. Additionally, when benchmarking shall be used for *learning* the ranking should be kept confidential and not revealed to a wider audience.

Fourthly, we have extended the framework of Cox *et al*. (1997, p. 291) by incorporating regulatory benchmarking as well. This is done to illustrate the differences between three aims of performing benchmarking, namely to gain superiority (competitive benchmarking), to learn (collaborative benchmarking), or to control (regulatory benchmarking). In other words, in regulatory benchmarking the regulated companies are expected to outperform each other as rivals, leading to no exchange of knowledge between the benchmarked, and thus no reciprocal learning will take place.

The last conclusion concerns using regulatory pressures to make a sector as a whole

more efficient. The conclusion is that different response to institutional pressures due to dissimilar scope conditions within the Danish district-heating sector may lay the foundation for greater heterogeneity within the sector. This heterogeneity comes in addition to inherent differences that could be accounted for using stratification. Such dissimilar scope conditions could be when the more resourceful organizations within a sector forms networks to learn how to perform benchmarking where they also learn from each other. Additionally, when they are forming part of larger organizations involving other sectors, they also learn from these sectors. This benchmarking knowledge is available for the resourceful organizations to curb the action of the regulator before regulation is put into action, or to various sorts of gaming when the benchmark regulation eventually is put into action.

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APPENDIX 1

Interview guide for Interview 1 (translated from Danish).

THEMATIC FRAMEWORK FOR INTERVIEW 1 (WINTER 2009/2010)

1. Can you tell something about how the benchmarking-work in your organization has developed during the last 10 years?
2. Which employees worked with benchmarking at that time, and how has it developed since then?
3. What relations does your company have towards other district heating companies, authorities, and the Danish District Heating Association? How has these relations changed over time?
4. What concrete experience do you have with benchmarking and the work around benchmarking?
5. What areas of development are interesting for the Danish district-heating sector related to benchmarking?
6. How does your organization work with benchmarking?
7. What is motivating your organizations work related to benchmarking?
8. What is your opinion on your organizations work related to benchmarking?
9. In your opinion, what is the most important happening to benchmarking at this moment?
10. In your opinion, what do you think of the level of information within the sector; does it decrease or increase?
11. If I say Danish district heating companies are similar toe ach other. Why do you think is the reason for this: Impact from the authorities, the companies imitating each other or the knowledge and network of the profession?
12. What do you think of the professional level of the Danish district-heating sector and what is your opinion on how the profession has developed? Do you know other sectors, and eventually how are these sectors in comparison?
13. In your opinion, which role do you think benchmarking play in your organization today? Do others in your organization agree?
14. Which problems have you encountered when working with benchmarking? If benchmarking is as important as you express, why haven't worked more with it?
15. How would you like benchmarking to work for you?
16. What must be different for this to happen?

APPENDIX 2

Interview guide for Interview 2 (translated from Danish)

THEMATIC FRAMEWORK FOR INTERVIEW 2 (SPRING 2012)

1. I have been fortunate to follow the six-city members in their benchmark model project. Now I am curios to hear your opinion what you have achieved?
2. What do you use the results from the project for?
3. How do you use it?
4. Who uses it?
5. In your organization, is it only for your personal use or also used towards employees?
6. Do you act different now than before you got this new way to do benchmarking?
7. In your opinion, do you think it has made a difference in the way you think or act in the organization?
8. How do you use accounting numbers in general in the organization? On management level or also at middle management levels?
9. How do you think it could have been if you hadn't had the result from six-city benchmark model project?
10. What kind of education do management and middle management have in your organization (professional managers or engineers)?
11. What areas of conflict do you have between management and technical professions?
12. Accounting may be used in many ways. Is there any link between accounting and the way you work?

CHAPTER 5: ARTICLE 3

THE FORMATION OF A BENCHMARKING MODEL IN SIX DANISH DISTRICT HEATING COMPANIES - AN INSTITUTIONAL PERSPECTIVE[6].

ABSTRACT

This study sought to explain why and how firms engage in inter-organizational voluntary collaboration when they are expecting increased coercive institutional pressure from stakeholders and from re-regulation in particular. Based on a qualitative study of the Danish district-heating sector's responses to expected institutional pressures from government for higher efficiency, results from studying six collaborating organizations revealed that they used the results in their operational planning and follow-up in order to legitimize and rationalize their operations simultaneously. The case study shows how the participating organizations were able to negotiate and agree on the meaning of the accounting guidelines, and not just continue their previous way of conducting their accounting. In other words, the study shows that learning has occurred even before re-regulation. The study contributes new insights to theories of institutional processes, benchmarking and regulatory behavior.

Key words: Benchmarking, institutional theory, regulation, Denmark.

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1 INTRODUCTION

The post-war period in the Western world was characterized by continuous economic growth until the end of the 1970s where signs of an emerging period of stagnation became apparent. This triggered a general dissatisfaction over the ever-growing size of the tax bill, which kick-started discussions of how to change or reform the public sector, as it was regarded as having grown too large, too ineffective, too bureaucratic and badly managed. Consequently, this critique led to what is coined in the literature as the New Public Management or NPM (Hood, 1991, 1995; Pollitt, 1995). Central to NPM is the adoption of private-sector styles of management practice as well as explicit standards, accountability, transparency and measures of performance (e.g. Hood, 1991, pp. 4-5).

The regulation specific for the district-heating sector is presently based upon what is commonly known as a 'cost-of-service' -regulation where the customer pays the price of the service according to her use, to cover the costs of the supplying company. This form of regulation is suspected not to carry incentives for the supplier to improve, especially regarding matters concerning efficiency (e.g. Jamasb & Pollitt, 2007; Jamasb *et al*., 2004; Giannakis *et al*., 2005; Olson & Richards, 2003).

The Danish Government (Government, 2006) brought the concerns in this regard up on a national level in 2006 as a part of the 'globalization' strategy. Here they presented 350 concrete initiatives, which together imply comprehensive reforms of education and research as well as significant improvements of the framework for growth and renewal throughout the society (Government, 2006, p. 7). Among these initiatives are competitive measures to ensure a better infrastructure, including district heating, as this is believed to have essential impact on the efficient use of resources (Government, 2006, p. 96).

This particular initiative materialized as a working group made up by the sector, local government and regulating authorities, appointed by the Danish Energy Agency. In spring 2007 they came up with a proposal for how to improve and visualize the efficiency in the sector having benchmarking as a highly relevant candidate (Danish Energy Agency, 2007, p. 20). A pilot-study on benchmarking of district heating companies appeared at the end of 2007 from the Danish Energy Regulatory Authority (2007) concluding amongst others with a tight timetable regarding future use of benchmarking within the sector. Since then the sector has awaited for re-regulatory measures to materialize.

Particularly six of the district heating organizations reacted by embarking on a joint benchmarking project called the 'six-city benchmark project'. From the outside the

project could seem as a natural extension of the benchmarking activities in the sector, triggered by the institutional pressure from the regulator for benchmark regulation of the sector. But, is the project an expression of a rational and well-intentioned concern to use the benchmark results in organizational change, or is it simply to show other they are doing something? Or, is it simply to learn how to perform benchmarking -or is it something else?

The primary objective of this study is thus to describe the experience of the six-city benchmark project. In this study we draw on Institutional Theory (e.g. Burns & Scapens, 2000; Powell & DiMaggio, 1991) to address issues of motivation and scenarios related to the initial decision to start the project itself, but also to the processes at work in the six-city coalition as they went through the phases of design, implementation and use of their benchmark model (Kasperskaya, 2008). The applied approach combines the understanding of top-down processes to understand macro-level processes (Powell & DiMaggio, 1991) with Burns and Scapens (2000) for the understanding of processes at micro-level to achieve a complementary tool for analytical purposes.

The research questions in this article could be summarized as follows:

- How could the combination of OIE and NIS serve as a complementary tool for analytical purposes when studying the role of benchmarking in organizational change?
- How may the dilemma of benchmarking leading to either learning or politics be explained?

The paper is organized as follows. In the next section two the theoretical framework is outlined as institutional processes where the main concepts are discussed. Benchmark regulation is presented in section three followed by a presentation of the empirical domain. Thereafter the employed methodology is presented in section five. The empirical findings are presented in section six and findings are discussed in section seven. Finally, the article is concluded in section eight.

2 INSTITUTIONAL PROCESSES

The theoretical framework has its offset in Scott (2008, p. 191) where he points to how top-down processes constituting and constraining organizational-level structures and processes, and how these are interweaved with bottom-up processes referring to Barley and Tolbert (1997). They refer amongst others to a model

combining the realms of action and institutions (Barley & Tolbert, 1997, p. 101) that is further developed by Burns and Scapens (2000).

As mentioned by Burns and Scapens (2000, p. 9) their framework is not intended to provide operational constructs for empirical research and hypothesis testing but rather to describe and explain analytical concepts which can be used for interpretive case studies of management accounting change. Their framework set out combining how institutions constrain and shape action at a specific point in time and how actions produce and reproduce institutions through their cumulative influence over time.

The analysis builds on two strands of Institutional Theory, namely what Hengel *et al.* (2011, p. 6) calls the *neo* Old Institutional Economy (OIE) of Burns and Scapens (2000) and New Institutional Sociology (NIS) particularly expressed in Powell and DiMaggio (1991). These theories are widely used by researchers in various management accounting settings to interpret not only the institutions themselves, but also processes of change (e.g. Kasperskaya, 2008; Leca *et al*., 2008; Model, 2009; Ribeiro & Scapens, 2006; Siti-Nabiha & Scapens, 2005).

The rationale behind combining NIS and OIE is due the potential complementarity among the two, although having rather different origin and levels of analysis. NIS is predominantly a macro-oriented approach, primarily concerned with the diffusion and spread of organizational models and/or techniques within given populations, although tending to be more towards ceremonial than efficiency ends. OIE on the other hand is a process oriented organization-centric or intra-organizational theoretical framework mainly concerned with the dynamics of organizational change as primarily being path-dependent.

OIE also pays more attention to the role of powerful individuals and organizational groups 'in the forging of tomorrow's rules' (Scott, 1993, p. 296). For example Sharma *et al.* (2010, p. 262) introduce 'how embedded agents influenced by institutional contradictions take collective actions in order to achieve institutional change´ and Zarifah and Siti-Nabiha (2012, p. 41) introduces how transformational leaders 'influence the way people think and introduce new processes' through mechanisms that provide opportunities to create new sense of direction and priorities for the organization.

Whereas NIS regards individual organizations within a given population as passive adopters, OIE is concerned with what is going on within the organization in question. Whereas NIS is introducing *decoupling* (e.g. Meyer & Rowan, 1977) or *loose-coupling* (Orton & Weick, 1990) to explain ceremonial aspects more than the rationale of efficiency, OIE treats the rationale behind *legitimacy-seeking* in line with *efficiency-seeking*, although suggesting *path-dependency* from existing routines as important for the change process. Another aspect of NIS is that of

isomorphism when organizations facing the same institutional environment tend to look the same.

The major types of such institutional isomorphism are coercive, mimetic and normative. *Coercive* is the result of organizations being exposed to regulative, legislative or societal forces. *Mimetic* is when self-doubting organizations imitate others regarded as more successful and *normative* is the impact on organizations from education, courses, training and practices of the trade. However it is important to bear in mind the warnings from Mizruchi and Fein (1999), namely the difficulty in telling the origins of the different types of isomorphism from each other, as they empirically are intertwined and not coherent.

According to Tracey *et al*. (2011) the change process, to be successful at least, requires interpretation and integration of new practices at the individual level, and at the organizational level it requires the encoding, enactment and reproduction of these practices to institutionalize them within each organization, whereas at the field level, a process of theorization and diffusion must follow to ensure the institutionalization of these practices.

According to Arroyo (2012, p. 303) 'the theorization process requires two main types of institutional work, namely the motivation of new accounting practices and the creation of alliances to obtain agreement on their implementation'. Diffusion, on the other hand, concerns how new ideas are moving like a physical object and for example Lapsley and Wright (2004) show how governmental pressures are highly influential on public organizations choice of new accounting systems, but without preventing these organizations to innovate their own accounting practices.

The institutional theory as used in this analysis is a process theory where point of departure is Burns and Scapens (2000) introducing the concepts of *rules*, *routines* and *institutions.* These concepts are seen similar by Kasperskaya (2008) to the phases of *design*, *implementation* and *use,* as is the typical 'life cycle' for any new technique or tool, and also believed to hold for a benchmark model as in this case.

3 BENCHMARK REGULATION

The concept of 'benchmarking' has gained worldwide popularity within many sectors such as, for example, local government (e.g. Knutsson *et al.*, 2012; Ammons & Rivenbark, 2008; Bowerman *et al.*, 2001) and various parts of the utility sector (e.g. Jamasb & Pollitt, 2007; Dassler *et al.*, 2006; Vinnari, 2006; Marques, 2006; Lin, 2005; Jamasb *et al*., 2004). When authorities for regulation purposes use

'benchmarking' it is sometimes called 'yardstick competition' which by Schleifer (1985) is promoted to minimize welfare losses involved with cost-of-service regulation. Important to notice in this regard is that yardstick competition describes the simultaneous regulation of identical or similar firms and outperforms cost-of-service regulation as long as firms are identical, or if heterogeneity is accounted for correctly and completely (Schleifer, 1985, p. 326).

Braadbaart and Yusnandarshah (2008, p. 421) conclude that public sector benchmarking can only be successful if authorities pay sufficient attention to benchmarking design, an appropriate accounting system and balancing collaborative and competitive elements. In this regard they also point to work-floor problems of data quality, comparability and the struggle involved in designing meaningful performance indicators related to internal accounting systems (Braadbaart & Yusnandarshah, 2008, p. 431). Benchmarking is by Dassler *et al.* (2006, p. 168) set to include all performance comparisons using other firms as comparators, but they also conclude on the difficulty in finding suitable comparators and data for benchmarking (Dassler *et al.*, 2006, p. 173).

Jamasb *et al.* (2003, p. 77) states that 'accounting procedures are universal for the firms in a given sector' indicating perhaps strict and detailed procedures in the sector under investigation or the collection of accrued data leveling out the differences among the companies way of accounting. In a later article on the same matter Jamasb and Pollitt (2007) states that 'the informational requirement for conducting a robust benchmarking exercise has proven to be more complicated than expected', and that 'establishing the appropriate reporting formats, standardization of data, and ensuring the quality of data has been non-trivial' (Jamasb & Pollitt, 2007, p. 6172).

According to Jamasb and Pollitt (2007, p. 6172) firms may attempt to seek higher capital expenditure to reduce operating costs, and whereas benchmarking ideally should apply to total costs, this may prove difficult given the heterogeneous nature of capital and ranking results could simply be a function of differing accounting standards. This is also according to Shuttleworth (2005) pointing to a similar situation in UK in 1999 when Ofgem[7] as regulator authority had benchmarked operational expenditure (opex) separate from capital expenditure (capex) in electricity network companies, resulting in a distorted regulation measuring different choices of strategy rather than different levels of efficiency, which Ofgem eventually had to admit (Shuttleworth, 2005, p. 314).

[7] *Ofgem is acronym for The Office of Gas and Electricity Markets (supporting the Gas and Electricity Markets Authority (GEMA), the government regulator for the electricity and downstream natural gas markets in Great Britain.*

The above was also recognized in 2003 by Irastorza summing up that 'Ofgem has affirmed that there is a tradeoff between opex and capex costs, and agrees that there is an important issue that needs to be dealt with' as 'the company with lowest operating costs is likely to be different from the one with the lowest capital costs and to have both could be almost impossible' (Irastorza, 2003, p. 36).

Some researchers claim regulative benchmark ranking tells the contestants whether to improve or to level performance, or in other words, triggering a behavior that lead to 'average' instead of 'best practice' (Knutsson *et al*., 2012). Others focus on the perceived 'difficulties' in using benchmark as a regulatory tool (Dassler *et al.*, 2006; Marques, 2006) not only due to information asymmetry but also to inherent sector specific problems. Vinnari (2006, p. 164) even claims a less rigid system based on self-assessment by an interest organization would serve the public better due the expertise of the interest organization leading to a more efficient, cost effective and flexible approach than more regulatory ones.

To include factors like service quality is preferably to cost-only approaches which otherwise could lead to unanticipated consequences (e.g. Jamasb & Pollitt, 2007; Lin, 2005; Giannakis, *et al*., 2005). Having also Bevan and Hood (2006) in mind regarding 'what's measured is what matters' it seems to be a problem of measurement associated with benchmarking which still remain unsolved, at least when in the hands of the government.

4 DANISH DISTRICT-HEATING SECTOR AND THE SIX-CITY MEMBERS

Being an important part of the Danish infrastructure as a part of the utility sector, district heating companies are subject for regulation as a natural monopoly. The inherent characteristics of district heating make it impossible for customers to shop among competing suppliers to achieve the right quality to price. To protect the customer as well as ensuring an infrastructure to meet the growing environmental concern as well as fuel flexibility district heating has been regulated since the introduction of the Heat supply act of 1979. District heating is now covering the heat demand of more than 63% of Danish households.

The Danish District Heating Association plays an important role in the multi-level field of Danish district heating. It was founded in 1957 and represents the majority of Danish district heating companies as a secretariat towards authorities and other stakeholders as well as diffusing new inventions among its members. It is worth

noticing the association's initiatives in this regard to introduce members to benchmarking in general, but also to introduce a Standardized chart of accounts aimed at facilitating and harmonizing accounting within the sector (Tagesson, 2007) as well as facilitating a standard set of benchmark key figures for the sector.

The research context is the 'six-city benchmark model project' made up by key personnel from six of the largest Danish district heating companies geographically distributed across the country. The organizations are all originating from being municipality owned and managed departments, but four of them are now turned into limited companies owned by the same municipalities, while one is still a municipal department and one is turned into a not-for-profit foundation. The reason behind this unbundling is found in the Danish water supply Act, stating that all water supply companies shall be subject for benchmark regulation as individual companies having a responsible board of directors. Having many Danish municipalities as owners and operators of the water supply companies they took the opportunity to do the same exercise with their district-heating companies at the same time of unbundling the water supply companies, although on a voluntary basis.

All six organizations have in common the obligation to deliver district-heating water both for space heating and for the heating of tap water to customers in adjacent cities and surrounding villages. They all have in common a quite stable customer base as district heating is a natural monopoly and many customers are even bound by local municipal law to stay connected to the adjacent district-heating network to ensure a large enough customer base. Nevertheless the sector is facing competition from various sources as solar power, heat pumps, electricity and fireplaces.

What is also unique among these six cities is that they are relatively resourceful and have many employees with various skills and are serving many customers, as opposed to the majority of Danish district heating companies that are small, with few resources and few employees serving few customers. The case study could help shed light on the organizations abilities, or disabilities not only to determine why and how joint models emerge, but also to ascertain whether areas as 'economy of scale' exist in this regard.

According to the Danish Energy Agency and Danish Competition Agency (2004, p. 32) a uniform chart of accounts is prerogative for ensuing a comparative benchmarking in the district-heating sector not only encouraging the Danish District Heating Association to make a guideline (Danish District Heating Association, 2008) for its members but it also materialized as five distinct key figures whereupon the companies shall be benchmarked (Danish Energy Regulatory Authority, 2007, p. 2). These were as follows: cost of production and fuel, cost of

operation and maintenance, cost of administration, distribution losses and finally investments in plant and equipment.

Practically seen, the key figures above demand the splitting of expenses into costs and at the same time contextualization of the costs to the relevant 'cost object' or key figure. Accuracy and consistency in this regard are prerequisites for the individual company for internal benchmarking, but certainly also regarding external benchmarking among the companies for learning purposes as well as regarding future benchmark ranking by the authorities having resulted in noticeable interest among the six-city companies to establish benchmarking on a voluntary basis.

Management accounting may be viewed as the accounting techniques necessary to install managers with sufficient information to make qualified decisions in order to manage and lead the business, typically being based on costs. Management accounting may also be seen as one side of the coin where the other is financial accounting, whose purpose is to prepare documentation to fulfill the requirements of external interests as tax authorities, regulators and other external stakeholders typically being based on expenses instead of costs.

For the Danish district heating sector these other external stakeholders include the taxation authority for which they shall prepare a financial statement and a tax statement, but only if they coproduce electricity as combined heat and power (CHP). For the regulator all district heating companies shall present a budget and an income statement based on a particular set of rules knitted together for the district-heating sector. An example of these particular rules is found in the Heat Supply Act, where district-heating companies to comply shall depreciate all investments, but are free to decide the period to be from 5 years up to 30 years, and likewise free to choose annual depreciation from 5% to 20%.

Danish district-heating companies are likely to operate at different capacity, which is obviously hard to read from a financial accounting system like a standardized chart of accounts. This would rank those operating near capacity to be superior to those not operating near capacity, everything else being the same. Likewise, those district-heating companies 'not maintaining equipment, by operating beyond rated capacity, by not investing in new equipment, and by imposing stress on workers to the point of alienating them' (Kaplan, 1991, p. 57) will obviously be ranked higher than those doing the opposite, everything else being the same.

A complementary system taking care of both financial and managerial accounting issues is convenient. The role of a standardized chart of accounts in this regard is not a new idea, and has been widely discussed in the literature (e.g. Näsi & Rohde, 2007, p. 1099). It is, therefore, interesting to see how the standardized chart of accounts prepared and promoted by the Danish District Heating Association is treated and used by the six organizations under study.

5 METHODOLOGY

Having the 'six-city benchmark group' populated by individuals representing the six participating organizations multi-level aspects are brought into play and according to Yin (2003, p. 40) the study could be seen to fall into the single-case study (the group of people attending the six-city benchmark model project meetings). But at the same time key representatives from the same six district heating companies are embedded in the project as logical sub-units forming multiple units of analysis and overall this results in what Yin call an 'embedded, single-case design' (2003, p. 43).

Given the difficulty in spotting organizations or fields of interest where change are going to take place in order to have a 'before and after' design, researchers may have to stick to retrospective accounts and archival data even if they are subject to rational reconstruction (Barley and Tolbert, 1997). The empirical section starts therefore with a historical wrap-up of what have happened in this regard in the past, based on archival data and interviews with key personnel of the six-city constellation, in order to have a 'before' state (Barley & Tolbert, 1997, p. 104). The last three phases represents the 'after' state focusing on the new attempt of building a benchmark model in the time period from October 2008 to June 2012.

According to Yin (2003), the ability to look at sub-units situated within a larger case may prove powerful as data can be analyzed within the subunits separately (within case analysis), between the different subunits (between case analysis), or across all of the subunits (cross-case analysis) overall 'allowing the researcher to understand one unique/extreme/critical case' (Baxter & Jack, 2008, p. 550). As will be demonstrated later the embedded level of key personnel will be analyzed from individual interviews.

At the outset the level of analysis (e.g. Thornton & Ocasio, 2008, p. 99) is generally seen a group of key personnel employed in related but independent organizations belonging to the same trade association (e.g. Oliver, 1990) explicitly agreeing to interact to pursue common goals or, in other words, a coalition (e.g. Clarke, 2000, p. 209).

Although large the six companies are all somewhat dissimilar Danish district-heating companies, such as, for example, with regard to type of fuel, customer base and localization. Scapens (2004) state that somewhat 'dissimilar' organizations in a similar institutional field may provide deep and rich research perspective and thereby contribute to the debate on drivers for management accounting change in organizations. At the same time these six companies are actively pursuing a

common benchmark model within the sector representing an extreme or unique case or what Yin (2003, p.41) calls a 'critical case'.

Hence the study is focused on what is happening at group level as an expression of both inter- and intra-organizational processes, both of which are gaining increasing attention (e.g. Arroyo, 2012; Bode, 2012; Coad & Glyptis, 2012; Dambrin *et al.,* 2007; Kasperskaya, 2008; Lukka, 2007; Ribeiro & Scapens, 2006; Siti-Nabiha & Scapens, 2005). Even though the focus on group level, the key personnel participating in the six-city benchmark model project meetings are certainly also of interest being embedded in their respective organizations representing first-hand intra-organizational sources of data.

		'before' situation	'after' situation		
Source:	Date:	Past attempt to build a BM model	Phase 1: Design of the new BM model	Phase 2: Implementing the new BM model	Phase 3: The new BM model in use
6-city meeting, observation	16.3.2009		X		
6-city meeting, observation	21.4.2009			X	
6-city meeting, observation	18.8.2009			X	
6-city meeting, observation	06.10.2009				X
6-city meeting, observation	24.4.2012				X
Interview 1 with Manager A, B, C, D, E, F in the 6-city companies	Nov 2009 – Feb 2010	X			X
Interview 2 with Manager A, B, C, E, F in the 6-city companies	May 2012 – June 2012		X	X	X
Interview with Department Manager, Danish Energy Regulatory Authority	05.3.2008	X			
Interview with Department manager, Danish district heating association	18.2.2010	X			
Interview with Managers in nine Danish district heating companies	Marts 2008	X			
Attending informal meetings, lunches, discussions, etc.	2008-2012		X	X	X
Agendas and Minutes of Meetings from 6-city meetings	2008-2012		X	X	X
Archival data: • **Annual reports** • **Laws** • **Regulations** • **Articles** • **News**	2008-2012	X	X	X	X

Table 1 Sources of the case study data

The observations at group-level took place at five meetings (see also Table 1), where the first four are during design, implementation and in-use phases during 2009 and the last is in 2012 when the model has been in-use for more than a year.

Interviews of key personnel took place at the end of 2009 to establish relevant clues from the accounts on the previous attempt during the period of 1999 to 2000 to construct a benchmark model among the same organizations (the 'before' situation), as well as to learn about the experiences with the design, implementation and use of the new model in this second attempt (the 'after' situation). All interviews lasted between one and one and a half hour and all were taped. Interviews with managers in the six-city companies were also transcribed. Detailed notes were taken when observing the six-city meetings.

The 'after' situation concerns the three phases from the period 2008 – 2012, where the first of these three phases is concerning the *design* of the new benchmark model for the same constellation, based on interviews with the same persons during winter 2009/2010 as well as observations of the six-city meetings during 2009. The second phase is covering the *implementation* of the model and is a mixture between interviews of the same persons from 2009, 2010 and 2012 as well as observations of their common meetings. The third and final phase is dealing with the benchmark model *in use* and is based on interviews of the same persons in 2012 as well as observations from a final common meeting where the companies discussed the use of the model as well as further advances.

Practically the first and second phase is intermingled as an iterative process and not easy distinguishable from each other, especially as the six organizations move at different paces as indicated in Figure 1. The analysis of phase three extends into what is called 'A follow-up on the benchmark model in use' based upon interviews in 2012.

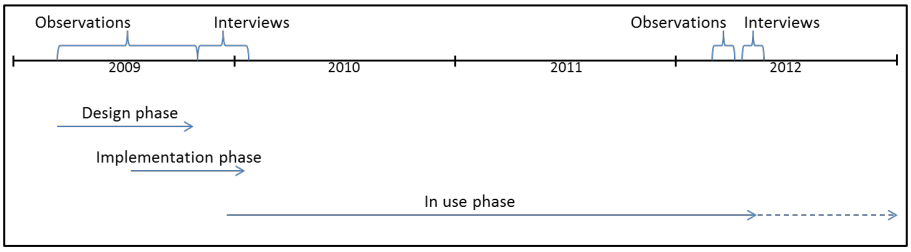

Figure 1 An overview of the three 'after'-phases of the project and related empirical data.

The study falls into both the explanatory and the descriptive case study taxonomies as the objective is twofold, to describe the six-cities' experience with the benchmark model and to interpret the findings in light of institutional theory. In this *longitudinal case study* my role as a researcher has been as a *visitor* (Scapens, 2004, p. 264). Regarding the six-city organizations I have been attending their six-city benchmark meetings as an *observer* where key personnel from all the six companies

have participated, and as an *interviewer* interviewing some of the same key personnel in the six-city organizations separately. Additionally, I have interviewed managers and board members in nine other Danish district heating companies early in the project to establish to know the sector.

Apart from the above I have met and talked to members in the various district-heating organizations at a multitude of informal occasions during seminars, lunches, or professional arrangements. Even though I have not been directly involved in the issues being researched it is clear that we have had a mutual impact on each other in one-way or the other (cf. Scapens, 2004, p. 264). As the identity of the interviewees are considered not to be of importance for the reader to know their names are not revealed, nor are their companies and therefore being referred to as 'Manager A' or 'Company A, respectively. To keep track of the development over time the naming of the companies as well as the interviewees will be consequent in the different phases.

The central empirical material to be reported hereafter is the data from the two sets of individual interviews as well as from observations from their meetings and agendas and minutes of meetings. The interviews with managers from the participating six organizations are presented at group-level as a result of cross-case analysis on the basis of within and between the cases. In other words when a manager is quoted it is regarded as representing the overall or general opinion among the interviewees. If any manager has expressed an opposing opinion, or represents a unique but important contribution her opinion is explicitly expressed.

6 EMPIRICAL FINDINGS

Using the framework of Scott (2008, pp. 191-193) to illuminate the organizational field of Danish district heating could indicate a structure as presented in Figure 2. The indicated top-down and bottom-up processes acts as counter-processes where higher-level structures constrain and empower the structure and actions of lower actors, which both reproduce and change the context in which they operate. The processes at work at the lower-level were actors are interrogating and responding to the top-down processes are explained by the understanding and stocks of knowledge of individuals and groups, where enacting and reproduction of rules and routines may lead to incremental change, or even more discrete changes (Burns & Scapens, 2000, p. 11).

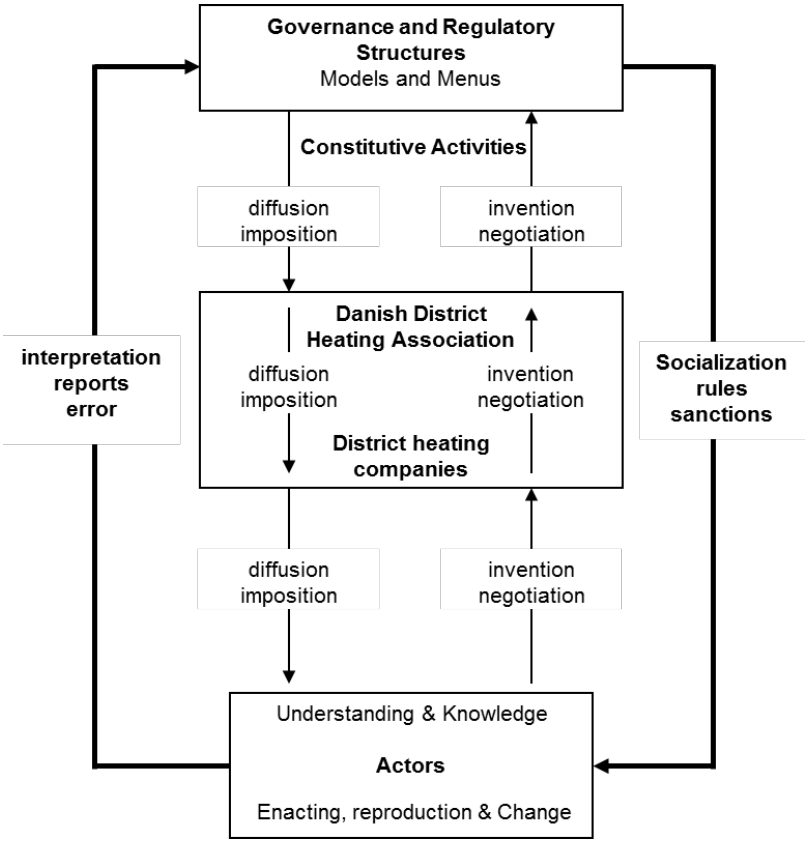

Figure 2 Specific Top-down and Bottom-up Processes in Institutional Creation and Diffusion in the organizational field of district heating in Denmark (adapted from Scott, 2008, p. 192).

Figures 2 offers a simplified illustration of the institutional forms and flows of the Danish district-heating field in general, and indicates what will happen when authorities eventually are launching the re-regulation. The time span we are investigating is interesting because the 'rules' are not made yet, and therefore no 'sanctions' from authorities, and consequently no 'interpretations', 'reports' or 'errors' from the actors. But, the situation is still intriguing because authorities have signaled what they plan to do, namely to introduce a benchmark regulation. In the meantime not all actors are sitting still, such as, for example, the six-city companies as they have embarked on a benchmark model project to prepare for what will come.

Past attempt to build a benchmark model

The first attempt to build a benchmark model started in 1999 when the six companies in the six-city collaboration gathered together to design an exclusive benchmark model for internal benchmarking among the same companies. According to Manager A, this benchmark initiative was initiated even before 'benchmarking' became an official issue within the sector. The following is a brief overview of how the six-city participants regard the attempt to build the benchmark model retrospectively, although not all of today's managers in the six-city members were employed at the time, and hence could not contribute.

Manager A recalls that 'the intention was to establish a way to compare costs related to the establishing of pipelines for distribution'. According to Manager B, they were trying to find comparable costs to dig ditches for district heating pipes to find standard costs per meter in the participating cities. They even went into details to calculate the different pipe dimensions to a standard pipe for the comparison of large and small district heating companies. The conclusion he drew was 'the variations became larger than the results, as it could vary more than 100%, and therefore I didn't believe in using a factor to compare large and small companies'.

Manager B also concluded that he believed 'more in grouping the companies according to size' and comparing them within groups instead. But nevertheless he also states:

> *The benchmark model in 1999 was in many ways a good benchmarking. We used a lot of time to check out if we had accounted similarly to give a correct picture of how it really looked like' and further 'but it became very political, in the sense, that we used it to establish good results in the benchmarking. That was more important, than to learn from (Manager B).*

When asked why the politics will be less important this time (in 2009), he answers 'We have decided to keep the information confidential, they may not be released', and further 'that was also the case last time, but nevertheless it was used externally to establish publicity by the companies that did well.' When asked how this could happen, he answers:

> *Each and every of us could decide how the model could be put together and used, and I can assure you that I can have any company to look either good or bad dependent of how I put the key figures together. It's just a matter of mathematics (Manager B).*

According to Manager B everybody engaged in this and is the reason why a rebellion in 2000 occurred. Furthermore:

> *That's why we had to compromise a diplomatic and pragmatic solution, where we made two results, -where we had one with a city-factor and one without, and the participants were free to choose. That became the result, and that's why we had many winners and few losers (Manager B).*

According to Manager B it got so diluted with politics they simply didn't learn anything:

> *In my world the learning starts, when the benchmarking is done. Learning starts when you ask: why is it that we are doing so bad, and why is it that someone is doing well. And when you sit down and analyze, then you'll learn- that's the learning process (Manager B).*

That is why Manager B deems it extremely important this time in 2009 to keep the results confidential and only to be used internally as a tool to become more efficient. The design and implementation of a benchmark model can be both mythical and ceremonial, as a kind of symbolic window-dressing linked to cultural rather than technical processes. Rationalized procedures cannot enhance organizational performance if they do not influence how things are actually done. According to Meyer & Rowan (1991, p. 53) they can, however, enhance organizational appearance and seen this way, rationalized procedures create the image of rational choices rather than the reality, -or in other words, they can 'rationalize rather than make rational', which might be the case here.

According to Manager C they had lot of work initially in 1999 regarding their first benchmarking attempt as they didn't have the standard chart of account at that time and had to do it all by themselves. Additionally, they went much more into details than they do now and they also found themselves 'comparing apples and pears at time to time'. Bur despite that the benchmarking in 1999 was, according to Manager C, quite useful when discussing with others: 'towards the environment, why it's expensive. So, I have used it on many occasions the last ten years since.'

According to Manager D the benchmark project in 1999 was initiated because the authorities came up with some ideas on price-cap and benchmarking based on the Heat supply Act, and the six-city members found that they should prepare themselves. They took contact with another district heating company already having a benchmarking concept and used them even as a consultant in the beginning to establish a head start:

> *'There we got the first experience with benchmarking, and it was kind of mixed experience. Certainly there were many discussions on, how... The main part was on how the numbers appear, how to do accounting etc. The benchmarking ended up with someone… because some had bad*

appearance, they would have correction factors, because evidently there are big differences how you produce and your distribution and where you are located' (Manager D).

And Manager D again as a consequence of this:

'Then you had these correction factors, blurring the results completely as it could be set to anything. It didn't come much more out of it, than those results, and then it died out' (Manager D).

There was also some talk about if the benchmark model should be continued and make internal benchmark on a yearly basis for the individual company to monitor how costs develop, but Manager D concluded: 'But, it wasn't really a feeling for it at that time.' According to Manager E one of the big issues in the first benchmarking attempt in 1999 was the eagerness amongst the participants explaining 'why' to rationalize and find excuses if one had a bad ranking as soon as the benchmark results were available, instead of asking: 'What is it that we can improve, -compared to someone we find comparable?'.

Phase 1 - Design of the new benchmark model

The six-city coalition is starting fresh in late 2008, having experiences from the benchmarking attempt in 1999 in addition, to recent events as a background for starting up the new six-city benchmark project in 2009, or as stated below by the chairman of the project:

The overall aim of the working group is to take care of the member's interests, by assuring a carry through of an internal benchmarking on chosen key figures from the accounting year of 2008. The working group shall lead, follow and carry through a benchmarking based on the model and the key figures, prepared by the ERFA group in benchmarking at the Danish District Heating Association with their Standardized chart of accounts as the point of departure for reporting data. The working group is reporting on a regular basis to the managers of the six-city member companies, acting as steering group for the project. The results from this benchmarking shall conclude with many key figures preferably with supplementary text. These key figures shall afterwards make the foundation for the desired learning process of the district heating companies. That is to say how the best performers act. Key numbers shall be analyzed leading to fruitful discussions – it is here learning comes into being! In 2009 the authorities are obliged to work on the Efficiency-report and we know they are about to prepare models for regulating those district-heating companies receiving heat from the

> *central combined heat and power plants. (Note from the chairman of the project to the group, dated 11.2.2009).*

The above statement clearly states for whom, why and how. The six-city benchmark project described above is planned through three distinct phases where persons with specific and different skills, education and background, particularly within the technical and accounting fields, shall perform each phase. During the first phase standards of reference is decided, involving skilled persons knowing the overall technical relationship from customer to production. Phase two concerns the provision of comparable data involving skilled persons understanding accounting within the context of district heating and the Standardized chart of accounts from the Danish District Heating Association.

The last phase concerns the preparation of the report with key figures as well as the process of analysis and learning aspects involving persons with both technical and accounting skills. The involvement of different personnel at different stages for different purposes sounds inevitably like a result of rational reasoning, but could also be a reflection of what the managers regards as a necessary involvement of people to influence the way they think and to introduce new processes into the organization (Zarifah & Siti-Nabiha, 2012, p. 41). The six-city benchmark project has also a detailed timetable referring to the three phases and what shall be achieved when.

At the first meeting at the 16th of Marts 2009 it was soon agreed to use and take advantage of the Standardized chart of accounts and the guidelines prepared and published among the members on a general basis by the Danish District Heating Association, although it was agreed that although voluminous it has many shortcomings. Further it was expresses 'to keep the discussion on a superior level and leave the details to their subordinates in the respective accounting departments' (Manager D). Even though the companies are similar in many respects, they are also different for example with regard to the interface with related companies. Some of them have a complete supply chain incorporating production, transmission and distribution of hot water (or even steam!), while others only have parts of the chain, resulting in a discussion and agreement for how to divide the costs among the various constellations to reach a state where they could compare with each other.

Throughout the meetings notes were taken by the chairman to capture what was agreed upon and decided along the way to compile it to ease future collaboration. It was also made a remark 'not to make the same mistakes as last time in 2000' (Manager B) by diving prematurely into process benchmarking. It is also worth remarking the composition of the actual participants from the six-city organizations, as even they are all managers some are technicians and some are economists. Even though the language and phrases used in the meeting seems to be understood by all,

it is possible to track their professional background from their way of arguing and discussing. They even make a joke out of it as Manager B says 'look out so the accountants doesn't defeat us' whereas Manager C replies 'aren't we all accountants?'.

The members express self-confidence regarding the importance and relevance of the work with the benchmark model also versus the authorities. But along the meeting the conversation switches between superior and general down to very detailed discussions, even if they have decided not to be too detailed, but some have also worries about too superior level of details. They also discuss the timeframe of the work to reach a benchmark model. The chairman proposes everyone to read up on the guidelines for the Standardized chart of accounts to the next meeting, and to reflect over to which companies they are comparable. The chairman suggest for the group how he intend to go about: 'first I will wrap up the notes from this first meeting, then all members are to conclude and agree in the next meeting to make a plan for the execution of the rest of the benchmark model project. Additionally, he tells 'all to bring their numbers for the next meeting' agreed to be the 24th of April 2009.

According to Kasperskaya (2008) the 'design'-phase of the new six-city benchmark model could be regarded as the 'rule'-phase in Burns *et al.* (2003, pp. 17-18) where rules are predecessor to routines. By repeatedly following rules, behavior may become programmatic - based on the tacit knowledge individuals acquire during execution of the rules such rule-based behavior could be described as routine. In the process of implementation, or routinisation, previously formulated rules may become modified as the groups involved mutually discuss and agree ways of implementing them. Rules are the formalized statements of procedures while routines are the formal and informal ways of applying the same procedures, or as the Manager A put it retrospectively in December 2009, almost one year into the project that:

> *One of the preconditions to make benchmarking, real benchmarking, that is you do your accounting in the same way, that is you have a chart of accounts, and you agree upon how to account the costs the same way, or else it's difficult to benchmark, you compare apples and pears, so that's why the Danish District Heating Association has made the Standardized chart of accounts (Manager A).*

And Manager A continue

> *It is very important when you make a standard chart of accounts that you also make an accounting guideline. That's what we have asserted, working with the six-city benchmark model, it's not always the existing guideline is clear and consistent anyhow. When we have dived into it,*

> *we have found some answers, and if not, we've just decided, that's how we'll do it (Manager A).*

As can be seen Manager A point to one of the prerequisites, in his opinion, for a proper benchmark model design when benchmarking for management accounting purposes amongst organizations namely the use of the same or similar accounting rules. It could seem quite obvious that companies shall be comparable, but the same is also the case for the numbers on which they shall be benchmarked or compared which also is agreed by the Danish Energy Agency, the Danish Competition Agency, and the Danish District Heating Association (Danish Energy Agency, 2007).

Phase 2 - Implementing the new benchmark model

After the initiating phase of the benchmark design three six-city meetings follows during the implementation phase of the benchmark model, although the model is continuously redesigned in an iterative way due to testing of the model with real data as part of the implementation. Observations and records proves the meetings are all initiated with an agenda by mail in advance, and all the meetings started with summing up results achieved in the meantime, and all meetings are ended by concluding remarks and agreeing on the date for next meeting. A Minute of Meeting arriving shortly after by mail always follows up all meetings. It should also be mentioned that the participants also had ad hoc mail correspondence between the meetings to discuss on unclear items and solve matters agreed in the preceding meeting.

The chairman prepared a Minutes of Meeting after the last meeting setting up the participants for the second meeting at the 24th of April 2009. The Minutes of Meeting was send by mail giving the participants some homework in order to set the scene for the second meeting. It seems the participants are well prepared when they open the discussions and they soon gather around some important issues like investment/depreciation on assets (pipelines) versus maintenance of the same which they need to take into consideration to make them comparable being a source of conflict. It is important to note that this time a representative from the Danish District Heating Association is invited to sit in during the meeting to serve as a backup regarding issues covered by the association and their work in this regard. The chairman points to the fact they all look for how they are different, instead of finding ways to make themselves comparable, and to the fact that the attempt in 1999-2000 stranded because basis for comparison were too fragile and to be avoided this time.

The issue of accounting principle is raised and how to deal with depreciations, where after they all agree not to use the Heat supply Act, but The Law of Annual Accounts, also being in accordance with guideline from the association, as this very

item could jeopardize the benchmarking altogether as companies using the accounting principles from the Heat supply Act cannot be comparable, and an accountant from Company C even say:

> *We are changing the principles of depreciation from year to year depending on the price we shall charge the customers. I think there are huge differences among the companies how we depreciate. If we don't agree, it will be a large problem to make us comparable (Accountant, Company C).*

They discuss and agree upon the contrasting views of the Heat supply Act and The law of Annual Accounts, and in which circumstances the two shall be used. Next issue is how assets are valued which also should be agreed upon for reasons of comparison, and how this previously was left to the discretion of the engineers. The chairman takes command and after they all have given their comment they agree to make it similar, namely by manual adjustment of the accounting figures regarding costs from their respective accounting systems, and to separate between administration, production and distribution, and what is left for investment projects to be put on the balance sheet.

The chairman asks everyone to agree on converting their accounting numbers to the Standardized chart of accounts to see where there are problems. The chairman also offers to send the spreadsheet he uses in his company to the six-city participants for their use in this regard, where he afterwards can collect and compare the numbers for benchmarking purposes. The representative from the association also point to the tools available at the association's homepage as an additional help and input. Manager F points to the fact that they are going to convert to the Standardized chart of accounts by the use of an external consultant and it will be a long process. The next meeting is agreed to be the 18th of August 2009.

Since the first benchmarking attempt of the six-city coalition in 1999 the Danish District Heating Association has developed the 'Standardized chart of accounts' with guidelines which shall serve as a common denominator to make a success of the new benchmark project achievable, but as Manager D put it retrospectively:

> *It has been kind of back and forth, to make some calculations according to the standardized chart of accounts. Most of the discussions have been on how all these numbers they =appear, and how we interpret the different items in the chart of accounts. There are prominent differences regarding how the companies do their accounting. There are many ways to interpret, and at the same time staying inside the definition. Moreover, of that, they may even not know the guidelines 100% down in details, those doing the accounting, right? (Manager D).*

At this time the process of establishing consensus on accounting rules have been ongoing for about one year, where the companies have had mail correspondence as well as planned meetings to discuss and agree upon how to understand the accounting guidelines to adjust them where they have been found unclear, or to define new rules where they have been non-existent. Afterwards they have returned to their premises to test the rules in practice to see if they can be implemented alongside the existing management accounting system without jeopardizing it. Overall this indicate the companies are approaching the new benchmark model in a different way than in the attempt ten years earlier and try to take advantage of the standardized chart of accounts and the guideline to reach a common understanding and interpretation of how to do the accounting part.

The importance of this is of course buried in the importance of making the companies and their numbers comparable to each other that only may be achieved if the staffs consistently make the accounting in the same way each time. Then they can use the results and dig deeper if they need to, or as Manager D puts it:

> *This time it is much more general benchmarking. The whole idea is, when we have made this general benchmarking, then, if there are places where we fall outside, we can go a step further and dive into the single element, and then we can do a process benchmarking on it (Manager D).*

First time the companies benchmarked against each other in the first attempt in 1999 they went for a 'process benchmarking' only. The way they do the benchmarking this time is first of all to make a benchmarking of comparable accounting numbers to see if they perform differently. And if they do, they may dig deeper through process benchmarking to investigate why.

The meeting at the 18th of August 2009 was at the outset devoted to data scrutinizing and to see if the guideline for the Standardized chart of accounts has been interpreted and used similarly by the participants. During the timespan from last meeting, the participants have filled in data into a common spreadsheet prepared by one of the participating organizations to establish a common format. In the meeting it was early decided to compare the benchmarking numbers in the common spreadsheet line by line to find deviations. One of the immediate comments was 'when we take a look on this, there is no doubt we do our accounting differently' (Manager D) and 'if we find out where we do differently we can incorporate it into the guidelines' (Manager B).

But, during the following discussion concerning the Standardized chart of accounts and the guideline, and an accountant from Company D states 'there is no single way to interpret it, and two persons will never do the accounting in the same way'. The chairman stated there will therefore always be a challenge to convert the

participating companies' individual accounts automatically into the format of the Standardized chart of accounts due to the inherent structure of the individual accounting systems.

Apart from the above one of the big issues is how to set the opening balance, as this will have great impact on the depreciation as well as the interest or return on equity (ROE) and therefore the result. The following discussion reflects diverging opinions as this has great impact on the benchmarks in general. It also reveals prominent differences in the financial structure of the companies and how they are run regarding their asset index containing details of their balance sheet. In general there is a discussion on how they may compare each other's numbers and how to distribute costs among the various departments and/or functions, where salary particularly is regarded as a source of discussion. The chairman proposes to concentrate on the benchmark numbers being obviously wrong, and solve bit by bit, having a representative from the association expert on the Heat supply Act to sit in. They have a walk-through of all items in the benchmark report, to find and discuss where to refine and if and how they may use the benchmark model in a beneficial way.

To the next meeting the participants shall review their input to the benchmark scheme, and re-issue it to the one participant being in charge for collecting the numbers that again will return an updated version to the other participants so they can agree on it. The next meeting is scheduled to the 6th of October 2009 and according to the six-city execution plan regarded as belonging to 'The new benchmark model in use'.

Phase 3 - The new benchmark model in use

At the meeting on the 6th of October 2009 the agreed benchmark model is presented with data collected from the participating organizations and presented as bar charts for comparison as well as an early attempt to present 'best practice' indicating how the companies go about to incorporate the benchmark model in their learning or knowledge sharing. The agenda of the meeting is to review the input and corresponding output, and discuss the results. Additionally, the aim is to prepare feedback to the association for how the guideline may be improved for future use, and to discuss the format of the benchmark report, how it shall be updated and who is responsible for collecting and assembling the data. Finally they shall decide upon further work concerning the knowledge sharing process and decide which areas are the most interesting to dig deeper into.

The immediate reaction from the participants when looking at the handout with their data put into a bar chart as in the upcoming final report is positive. The report is discussed and commented across the table to find a consensus of the meaning behind every benchmark number and coming up with suggestions for naming the

different bar charts. It is also discussed how the benchmarking exposes how different they are. Some also expresses surprise when they realize how they rank towards others and state they have got new knowledge: 'we have indeed new knowledge after this' (Accountant, Company C) which also expressed appreciation how challenging the work has been to everyone to reach the current result.

Generally it is negotiated throughout the meeting to reach consensus on important items in which they seem to accomplish. There is a general satisfaction with the result sounding phrases like: 'we are on the way to produce a description for our board…this will be a best seller' (Manager A) and 'this is something which is asked for in our organization' (Manager C and D). The fact that the different organizations have different requested levels of information is realized resulting in different resolution of their cost accounting. This result amongst others in Company C does their (ad hoc) detailed costing in connection with the benchmark model outside their regular accounting system (Accountant, Company C). To the next meeting the participants shall review the preliminary report, and report back to the chairman. The next meeting is scheduled to the 10th of November 2009.

During the time span between the meeting 6th of October 2009 to the 10th of November 2009 there was lots of activity from the participants to the chairman as well as between the participants regarding commenting on the preliminary handed out report indicating solid interest from the participants towards the expected outcome. The agenda states detailed walk through and approval of the report, as well as deciding on the comments accompanying each bar chart in the report. A date for issuing the final report shall also be decided upon as well as if there shall be a follow-up regarding process benchmarking.

In the meeting 10th of November 2009 the participants decided specific items to be changed in the final report, as well as the degree to which the final report shall be confidential. An important point is also if the next phase additionally, shall incorporate taxes and levies into the benchmark report. After the meeting a reminder was send by the secretary containing missing points and numbers for the participants to report back for correction before the final issue of the benchmark report. There was not expressed a follow up to this final meeting, but elsewhere it is referred to a scheduled meeting for managers in the six-city coalition the 18th of November 2009 where the benchmark report shall be discussed. Finally it was distributed an anonymized version of the final benchmark report by mail to the participants the 23rd of November 2009.

The observations from the six-city benchmark meetings were followed-up by interviewing the managers from the respective organizations starting with Manager A and when asking in to the regulative pressures form the authorities he states that:

> *They threatened to benchmark us already now in 2009 on our accounts from 2008, but the air is out of the balloon you see. Therefore, when there is no demand for it, we have chosen to voluntarily do what we are doing now. And maybe to be a little prepared where we are positioned, if it comes to a real benchmarking…but it is also because we think, we can learn from each other (Manager A).*

When asked about efficiency the same Manager A answers that 'it is nice for us to have someone to compare with so we can say, 'Does it look bad or is there something to harvest?' referring to how they are now able to negotiate administrative costs, which they assume from a shared service center within the municipality or if they buy services externally. When asked about the impression so far regarding the benchmark project, Manager B answers 'it's exciting I think. In my opinion you get lots of information from these various bar charts' and continue saying 'but we know for sure, the input data we have used, they are not the best quality, and if we should go down into detailed benchmarking, we should make much more out of this'. When asked about the experiences with the existing guideline while using the new benchmark model Manager B answers as follows:

> *We have revised it, which also was one of the targets, that we should test the guideline and see, how good it actually is, also the key figures, are they really good enough? One thing we found out in the process was amongst others, we didn't include re-investments. We have it now. That's extremely important. And the more I think of it, the more important it is, because if you make benchmarking, then you shall include a lot on operation, maintenance and re-investments. Because if you don't, the winner will always be the one, that doesn't spend any money, -the one that shut down on maintenance. If authorities get involved someday, then it's extremely important, that we've been working on this, because then they'll understand the importance of it (Manager B).*

Manager C also expresses why he finds it difficult to take advantage of a unanimous benchmark model where everyone's requirement for a suitable key figure is taken care of, and especially when it is made public:

> *That's why we ends up with this pragmatic solution that you can choose the key figure you prefer…because it should be something on efficiency…because it could be a factor of three in difference, -it doesn't always depend on if one is better or worse, to tell who is the best (Manager C).*

When asked if this will impact the district heating companies and their influence on the authorities, Manager C answers, 'Yes, and that's why, those knowledge sharing groups in the Danish District Heating Association have ended up with that you'll

decide for yourself which key figure you want to use'. Here Manager C points to a very important issue relative to benchmarking that of the risk in comparing apples to pears.

And the Manager C continues, 'It's nice to look at production, distribution and administration, but it's when you start comparing key figures relative to, that you get these huge differences.' And when asked if this can't be dealt with using stratification Manager C answers: 'yes, but let's look at the six-city members. We are quite similar. You cannot compare us with a small village. That's for sure. But even if you compare…you can see it's a difference also within the six-city members'. Again Manager C points to the difficulty when using key figures from the benchmarking and trying to see them relative to other technical figures to draw conclusions. On the one side it's rather dangerous if the parties are not allowed to explain the background of the numbers to see if there is a natural explanation, but on the other hand the explanations will also induce a smokescreen.

When asking Manager D his opinion of the benchmarking model and if the various member organizations may reach the same understanding of the Standardized chart of accounts he answers:

> *I think it will be unbelievable difficult. It will be very challenging, but surely, with some training like the training we've had, there will be adjustments all the way. In other words, it gets better and better as you go through this. If you just do the ordinary benchmarking where you send data to the Danish District Heating Association, and they again put them into some tables they have and just spits the results out in your face, then you can't relate to them. You are to sit down around a table as we have done now, and discuss what it is that we put into the different boxes. Because, if you just report your data and they appear in some surveys or similar then no one have the faintest idea how the numbers have come into existence. It takes that you have to have a dialogue on it. At least in the beginning, so you can harmonize how to interpret these numbers (Manager D).*

Regarding the experiences from the implementation and use of the benchmark model he continues:

> *Again, the purpose of this project was to learn how to do our accounting and how to interpret the standardized cart of account's guideline, and what's the problem altogether, and maybe not been taken care of. That you will first find out when using it. Those having made the standardized chart of accounts, they haven't had their fingers in it by themselves. The Danish District Heating Association that is. Certainly they know a lot,*

> *but when it comes down to praxis, then it surely is other items popping up (Manager D).*

Even though well into the benchmarking model and being a proactive part in the over-all process it seems Company D is not really using the benchmark model in their daily work, and see it more like a one-shot exercise although they are prepared to continue with it if it is a consensus among the six-city participants. But still they have made many important figures and numbers more visible through the bar charts and their explanations, and according to Manager D they have learnt a lot on issues they might have had only some clue on before. Aside from that Manager D points to the fact that the very presence of the managers being a part of this six-city benchmark is also a way to establish visibility and alibi within own organization towards peers.

Company F is also progressing with the six-city benchmarking project but also internally with a parallel project, or as Manager F put it:

> *We are well under way with a project, where we are converting to the standardized chart of accounts. It's our plan that when we reach the end of the year it shall be ready, and we'll be on the standardized chart of accounts next year. That will make life easier (Manager F).*

Or, in other words they are implementing an accounting system using the standardized chart of accounting system in parallel to the existing because even if they wanted to, they can't switch to another accounting system because they are to run the accounting system of the municipality as their owner. But they are not just doing it for fun, as there must be a cost-benefit how much they get out of it compared to the resources they use, or as the manager puts it:

> *If we shall just do it because someone thinks it's a good idea and we wouldn't benefit from it, then there is no reason for us to do it. We shall use it actively, the benchmarking, to make it easier for us to benchmark towards the others. It's a clear measure of quality to say, how good we are towards the others. If we can't do that, it's difficult to prove how good you are (Manager F).*

The above quote indicates the need to demonstrate relative efficiency towards superiors and stakeholder.

Manager F also points to the fact that the six-city members are all quite professional and they use lots of experts, especially in accounting. The benchmarking project has proven very useful to identify the different ways of doing their accounting after all, even if they all have these in-house experts available. According to Manager F there is also solid argumentation for why everyone should use the standardized chart of accounts in one way or the other, for example as a kind of mediator or translator

between the different accounting systems so relevant data ends up in the standardized chart of accounts at the end of the day, to make the data comparable.

A follow-up on the new benchmark model in use

The next 'official' meeting concerning the six-city benchmark project was held the 24th of April 2012. This was a follow-up meeting to reveal further in-use experiences utilizing the set-up from the original benchmarking report (using accounting numbers from 2008) on accounting numbers from 2010. In the meeting the updated benchmark report is commented on, both regarding preliminary results, but also how to improve it. The importance of having comments in the report explaining the figures are highlighted as necessary, and is agreed to be incorporated. A new key figure to be incorporated in the benchmarking is also discussed and agreed upon as related to CO_2.

They are also again discussing various definitions related to the different accounting principles they shall comply with and how the benchmark model shall cope in this regard, but anyhow they discuss, negotiate and agree upon common definitions. Manager E is also commenting: 'the more we have worked on this, the better we can argue towards the authorities on the best way to do benchmarking'. They are also agreeing upon how the work related to new issues of the benchmarking reports shall be split among the companies. It is also discussed how the present report may be ready for an upcoming meeting among the larger Danish district heating companies were the work on the benchmark model shall be presented.

The second round of interviews took place in May and June 2012 almost one and a half year after they had ended the first phase of the six-city benchmark project to hear what has happened in the elapsed time. When Manager A is asked if they use the results from the six-city benchmark project in her organization she answers:

> *We have a kind of business plan. It is really a strategy-plan were we plan our activities for the next 13-24 months, but the horizon we use that is 4 years planning horizon… Here we use benchmarking, because we have the objectives in one part where we have targets for everything related to personnel, environment etc. But we have also something on competitiveness. We shall be competitive. How we measure this is compared to, partly this general statistics for the sector, but more specifically towards the six-city numbers (Manager A).*

In other words, Company A has decided to incorporate the benchmark model into the formal communication to set targets compared to the other five companies in

the coalition, and even to present the targets to their board, together with the strategic plan, to be held up on them on a yearly basis. They have decided to do it voluntarily to prepare if the authorities are introducing a more tight regulation of the sector. Manager A also states that 'we are now dressed up to enter a dialogue on how to make benchmark numbers', when the authorities eventually are introducing the benchmark regulation that is.

Company B has also extended the original benchmark model into their own organization, so they are now making internal benchmarking, already having the results for three successive years, and for the future almost with the push of a button. In addition, they have a revised and extended their internal accounting guideline that they consult when they are in doubt when doing their accounting. The plan is to enter into a dialogue with the Danish District Heating Association for the further use of the new and revised guideline to the rest of the sector.

There are still some point which has to be settled and especially with regard to how to account depreciation, as this is an important source of discrepancy between companies, and they therefore need to have *three* registers, one towards the authorities regarding to comply with the Heat supply Act, one towards the authorities to comply with the general tax law, and one for their internal use when benchmarking with others. When asked if they use the benchmark numbers for more than just to communicate with peers and superiors, Manager B answers that 'we have in fact used them in a management seminar a month ago, where we agreed to split up the overall objectives into the individual section. Our section leaders shall now try to set up some targets. So it's an ongoing process', indicating the benchmark model has become institutionalized in the company as a new routine.

Manager B mentions also the ongoing work on revising the six-city guideline as an interactive process where they practice, learn and revise the guidelines to end up with a guideline anyone could use and make a similar benchmark, and eventually compare with the six-city members if they follow it. Regarding how they are producing data for the benchmarking they are using dimensions in their accounting system to make it more or less automated. Many of the other six-city members are doing it as well, resulting in a more and more consistent and repetitive benchmarking with more solid data as they are becoming more and more aware of their costs. The best example of practical application of the six-city benchmarking is how Company B has reduced their costs regarding new branches to their distribution pipelines from paying the highest price of the six companies, to pay lowest.

Manager B uses the benchmarking also towards his superior for discussion. But until now they do not use the benchmarking to set targets. They will instead use the benchmarking as an indication to tell whom the best performer is, and then visit them to see how and what they do, as a learning process. The manager also tells that

the benchmarking doesn't take much of his time anymore. And the limited time he spends on it is well paid in the form of easing his work when preparing the annual report. Additionally, when he shall do his argumentation towards his superiors he has a stronger standing than if he only could express it orally.

When Manager C is asked about the six-city benchmark model in use the manager answers:

> *First of all I present it for my superiors. So they can see how we are doing and we have a target that say we shall perform better. We shall improve more than the others. And that we cannot see, if we cannot see, what the others are doing… We have the strategy that our prices shall improve compared with the other six-city members. That we can't do if we haven't a benchmark for it (Manager C).*

When Manager C is asked how active they use the benchmark numbers towards own employees, the manager answers 'no. Then I use my own numbers and my own numbers only. Benchmarking is just to establish inspiration'. The manager also informs that when they are doing their annual internal benchmarking they are also using their own numbers only. Concerning what they use the six-city benchmarking for the manager answers 'we make a lot of knowledge sharing on lots of things which contributes to all this' and continue 'in that way we use each other'.

When Manager E is asked about the six-city benchmark model in use the manager answers:

> *We use it a lot internally in the department. So, when I sit down with mine… we have one works manager and some coordinators who are professionally responsible… when we sit down and talk, -if we do it good or not so well, then we look at these benchmarks for inspiration. We are quite proud of ourselves, but there are some out there doing it differently giving them better results, and then we have a talk on what are these differences (Manager E).*

Company E uses the six-city benchmarking on a regular basis, as standalone key numbers or in combination with other internally produced benchmarks to produce KPIs for the employees. According to Manager E an important part is also how their internal accounting is inspired by the six-city benchmark project, and to discuss how they do their accounting as he think the biggest challenge is the accounting part, especially as they, as a larger company, cannot use the Standardized chart of accounts. The manager confirms additionally, that 'we also use it in another way as process benchmarking, especially in the cases where we say: here is something we don't understand, -or we cannot understand why we are so different'. Then they use process benchmarking to find why they are different,

but also to share knowledge and to dive down in the sub processes to find how they can do it more efficient.

Manager E also use the six-city benchmarking towards the board of directors where they explain and present action plans if they are low performers, and have a potential for improvement. When asked if the six-city benchmark has an official status Manager E replies:

> *Yes, we have a topic on one of our yearly board meetings, where we go through three different benchmarks: the six-city benchmark for heating, and the two water and wastewater benchmarks. And they get compared in a common presentation and reviewed towards the board (Manager E).*

When asked if they got hung up on the KPIs Manager E answers 'yes, the KPIs they mean responsibility. The action plans, if we don't meet our targets, then… if we two months in a row don't meet our targets, then the responsible shall come up with a plan, or we sit down and make a plan together'. When asked about how the accounting is done practically, Manager E answers 'first we take outset in the standardized chart of accounts, then we transfer it to our projects, where we do our accounting, and then back again in to the standardized chart of accounts', which the manager claims to be easy as the whole setup is automated in the accounting system, and Company A and B is said to do it more or less the same way, strongly indicating the institutionalization of new accounting rules.

When Manager F is asked about the six-city benchmark model in use the manager answers:

> *We do a lot of talking. I think we get better and better in using it, because what we do now, -now we get an overview and see if anyone is outstanding, and you can see and discuss the explanation, where some are inexpensive and some are more expensive on the same level. And start to learn from each other, and that's why we have started to make this process benchmarking within the six-city group on distribution pipelines where we look into renovating them, we look into administration and so forth (Manager F).*

When asked about the use towards the board of directors Manager F answers 'no, not at this time. Because they don't go too much into details', where the reason for this could be found in their organizational structure. Apart from that the benchmarking results from the six-city benchmark project seems so prosperous Manager F want to introduce the benchmark model as well as the set of guidelines to the rest of the district heating companies within the association. Even though Company F have a rigid and fixed accounting system they have started to make

changes to their man-hour registration system to make registration and use of the six-city benchmark model easier, but still they have to convert manually from the accounting system into the Standardized chart of accounts to make the numbers comparable within the six-city benchmark model.

7 DISCUSSION

Are they changing?

According to Dambrin *et al.* (2007) the format of new performance measurement models can be highly pertinent in the process of institutionalization. Radically new or rigid techniques may have more difficulty in being accepted than flexible and ambiguous techniques, because these allow the old and the new ways of doing things to co-exist also mentally. In all six companies it can be argued that the smooth introduction of the new benchmark model managed to avoid resistance to this new organizational rationale.

In all six organizations except Company F the format of the new benchmark model, and use of the same, was merged with old habits and systems accepted by superiors, as conferring legitimacy. In Company F the benchmark model lived a life of its own, not becoming institutionalized but not abandoned either. The analysis suggests that linking familiar organizational routine, such as accounting and budgeting, together with new rules and procedures, such as the introduction of the benchmark model, ensures greater commitment and buy-in from subordinates and the attaining of necessary support from superiors.

These findings therefor maintain Burns and Scapens' (2000) proposal about 'path-dependency' in change processes. The analysis also suggest that existing routines, such as accounting and budgeting, influence the selection and implementation of new ones, offering implicit support to the OIE evolutionary view of step-by-step adaptation of new routines and practices by managers.

It is important to note that the initiative to this management accounting change project is coming from the management in each participating six-city organization which themselves takes an active part in the design, implementation and institutionalization phases (cf. Burns *et al.*, 2003). Management of the change process could therefore be viewed as taken care of, since the initiators are the same as the executioners and users, although the new model shall also be introduced to subordinates as well as superiors at a certain stage. Another important issue regarding the process of designing and implementing the new model, the top

management in each company also actively involves accounting personnel in early phases, as they are the ones which shall incorporate the benchmarking model and do the accounting.

The dynamizing and stabilizing forces in the process of institutional transformation may give rise to fragmentation and variety due to different institutional logics rather than isomorphism (Modell, 2009, p. 278), but this does not fully explain the participants of the six-city coalition. To arrive at a more complete understanding of the action repertoires available to individual of organizations in institutional fields as well as the forces contributing to the gradual transformation of institutional logics across groups of organizations, and especially why they are pulling in the same direction and also why they are proactive in their effort, may be found in the strategic intentions of 'dominant' coalition. It has long been recognized that those regulated are able to influence the regulations intended to curb their actions (Bozanic *et al.*, 2012) that also could be the situation in this case.

The six-city benchmark model project started as a loose-coupled project in all the six organizations, but during the design and implementation they all operationalized the new model and used it actively within their organizations, except for Company F as they continued to be loose coupled. Regarding the use of the Standardized chart of accounts it seems all participants have had thorough discussions and negotiations on the substance and details of the matter that is important to reach a common understanding and definition. Between each meeting the participants are discussing internally in their companies how to understand and how to do, introducing a vocabulary and way of doing which eventually is incorporated in the daily work.

The discussion among the participants in their network meetings as well as when presenting and comparing data in the same meetings, gave the six-city participants the possibility to benchmark both their own and other network participant's practices, exemplifying the network benchmarking approach. This was taking place in all of the investigated phases, from the 'design' phase to the 'in-use' and 'follow-up' phase, indicating not only an up-front positive attitude, but also a lasting positive attitude among the network members throughout the project.

Are they becoming similar?

According to Powell and DiMaggio (1991) organizations come to emulate each other because they are in similar environments, distinguishing between competitive and institutional types of *isomorphism*. Having six independent organizations not in competition with each other but comparable since they are the same sector, seems like a good match for a horizontal benchmark project to find the most efficient way to do things, or even like a rational choice, meaning no more reason to look for institutional issues. But even if this rational choice reason was the outset of their

first attempt in 1999 the resulting use of the benchmark model showed they could not agree on how to conclude on the results.

But the first attempt on making a benchmark model in 1999 could also simply have been mimetic isomorphism as they saw others experimenting with a benchmark model, from whom they later got assistance and a benchmark model so they didn't have to start from scratch. But either way, if the outset was to learn from each other to become more efficient or to mimic somebody else, they ended up window-dressing with distorted rankings. But that is not the same to say the benchmark work was inconsequential or didn't alter power relations either between or within the organizations (Powell & DiMaggio, 1991, p. 67). So, now they have tried it, and abandoned it until the authorities' rattle with sables eight years later.

In their second attempt in 2008 it is important to note that the six-city members embarked on the benchmarking project without being formally imposed by new institutional pressures, although the institutional pressures from the authorities for benchmark regulation of the sector is present. In this regard it seems the six companies have almost the same agenda, namely to prepare themselves for upcoming initiatives from the regulating agency and the benchmark model initiative may therefore be characterized as an example of coercive isomorphism. Later when they had went through the design phase they began to see the benefits emerging from the work on the benchmark model as they now have a better common understanding and a common model.

One could also conclude an absence of mimetic isomorphism as there initially were none to imitate within their sector, but there are other related sectors already being regulated so one or more of the six companies could be imitating similar sectors. In consequence, all six organizations engaged in the construction of a new organizational rationale underpinned by the concept of a new performance measurement tool.

The Danish heating association is very important regarding the normative aspect of isomorphism as they arrange courses, seminars and education for all sorts of employees especially blue collar. But apart from that there is very little, if any, transfer of knowledge from blue-collar employees changing employer, simply because the blue collar worker does not switch employer. Regarding accounting, it is generally the Danish District Heating Association arranging and offering courses, seminars and education in matters of distinctive relevance for district heating companies for the member organizations own accountants, but also for external accountants and auditors.

What are the consequences of benchmarking then?

In five of the six companies, it seems preemptive reasoning rationally motivated embarking on the benchmark project, and not ceremonial. In Company F it seems somewhat more ceremonially motivated, as for this organization it appears the benchmark model was a symbolic managerial tool to signal an organization like the other five. But on the other hand Company F took active part in the benchmark model project together with the other five and the model seems to assist in managerial decision-making, although the outcome is not used towards superiors. But anyway, company F is prepared in line with the others, if the superiors get interested, or if the authorities introduce a benchmark based regulation.

Even though the focus of Braadbaart & Yusnandarshah (2008) is on public sector benchmarking the problems of data quality, comparability and the struggle involved in designing meaningful performance indicators related to internal accounting systems seems to be relevant also for organizations participating in collaborative voluntary benchmarking projects as the six-city benchmark project. How information is interpreted and operationalized in the six-city benchmark project could indicate the role of 'economy-of-scale' in regard to available resources, but also how a new model is negotiated to reach a common understanding when a new model is introduced through the phases of *design*, *implementation* and *in-use* (Kasperskaya (2008), similar to the concepts of *rules*, *routines* and *institutions* (Burns & Scapens, 2000).

As a consequence, when warned about upcoming re-regulatory changes, as the introduction of a benchmark regulation, the resourceful six-city organizations reacted in a different way than the smaller with fewer resources. The resourceful acted in a proactive and selective way, as they initiated and formed an exclusive benchmark project, which they carried all the way to implementation and use. The small organizations with fewer resources jumped on the bandwagon on another benchmarking project initiated by the association, but when the momentum was lost due to multiple reasons, the participants also lost their interest, and the association's benchmarking initiative came to a halt.

The reasons above are first of all found in the difference in resources between the two groups to cope with issues like interrogating accounting standards, implementing the result in parallel to existing accounting practices and negotiating meaning with collegial organizations. Secondly the framing of the upcoming re-regulatory changes led to the resourceful organizations seeing an opportunity to learn benchmarking to stay ahead of the re-regulation to be prepared when the re-regulation is about to happen, to be able to impact 'the forging of tomorrow's rules' (Scott, 1993). As a direct consequence resourceful organizations will have better pre-conditions with which to comply when the re-regulatory changes are introduced. A third reason may be found in the resourceful organizations to use the

benchmarking project as a new tool in their toolbox to set a new agenda in their own organizations.

OIE and NIS provide alternative ways of seeing and offer a synergetic tool to study the role of benchmarking in organizational change within the public sector. Both theories highlight specific aspects of the processes going on in regard to the benchmarking exercise. From the NIS, much can be learned about the way influence is exerted by institutional requirements and fashionable trends, whereas OIE can suggest the underlying field level-structures and the mechanisms required to cope with them, while at the same time being impacted by existing routines and path-dependency. This approach combines the understanding of macro-level processes with Burns and Scapens (2000) for the understanding of processes at the micro-level to develop a complementary tool for analytical purposes when studying the role of benchmarking in organizational change within the public sector, and the outcome is illustrated in Figure 3 below.

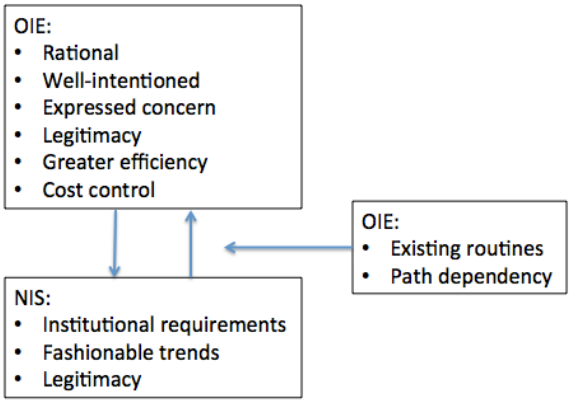

Figure 3 Institutional processes in the six-city benchmarking network.

From the OIE way of seeing it seems the six-city benchmarking network is acting in a rational way, were they express well intentions and concerns specifically with regard to the sector as a whole. The rationality is also expressed through the use of the benchmarking exercise to achieve greater efficiency and cost control. They use results from the benchmarking project to legitimate their actions towards not only superiors within own organization but also towards lower ranked employees. Finally they use the benchmarking project to position themselves and their organization as good as possible in the waiting for the benchmarking regulation to come, and perhaps be able to curb the action of the regulator.

From the NIS way of seeing the six-city members are engaging in the benchmarking project because of institutional pressure, as the benchmark regulation

is already announced, and the six-city members are taking action to be prepared and to learn how to handle benchmarking. On the other hand, to engage in such a project is also seen as a fashionable project and signals that they are proactive and level with the society at large regarding management control systems. At the same time it signals to the outer world they are taking extraordinary precautions, and thereby gaining legitimacy.

The six-city organizations express having a strategic behavior in their response to the institutional pressures imposed on them to gain legitimacy and thereby secure resources, grants, etc. on which they are dependent, which again could indicate 'window-dressing' and decoupling from actual operations (Zucker, 1977). But at the same time the organizations are institutionalizing the benchmark model and using the results in their operational planning and follow-up, so instead of window-dressing it seems more like legitimacy-seeking and rationality at the same time.

The way they are performing this accounting change is to have an accounting system based on the sector's standardized chart of accounts, in parallel to their ordinary accounting system, and thereby this is not affected. So the organizations may continue with existing routines, and path-dependency will see to that existing routines and institutions will shape the selection and implementation process of the new rules.

Some practical implications

Introducing a standardized chart of accounts across a diverse set of companies is according to Jamasb and Pollitt (2007, p. 6172) note not an easy and straightforward task, although the authors previously had argued that it was so (Jamasb *et al.*, 2003). Further, using accounting data in benchmarking, can be troublesome (cf. Tagesson, 2007, p. 259), due to data quality, comparability and the struggles involved in designing meaningful performance indicators based on different accounting systems (Braadbaart & Yusnandarshah, 2008, p. 431; Walter, 2009, p. 231).

The study of the six-city project has demonstrated how the interpretation and understanding of accounting rules and standards differ among the companies and how order and interpretations are negotiated in a social process. If similarities and differences are not dealt with in this process it seems unlikely that a standardized chart of accounts will actually contribute to standardizing data and ensuring a sufficient data quality for benchmarking purposes. Additionally, it became more and more evident during the benchmarking process, that accounting principles in relation to assets, including depreciations, represents a specific challenge. No easy solution to this problem is obvious because most district heating companies do not have a (traditional) balance sheet where assets are recognized.

Bringing six somewhat similar companies together and agreeing on a common understanding of accounting based indicators was possible. But introducing a standardized chart of accounts based on a mutual agreement among 400 heterogeneous companies within the Danish district heating sector will probably be extremely complicated if not impossible. Among the key factors that seems to have contributed to the agreement realized among the six-city group is probably that it was a small group of companies comprised by large companies with the technical expertise to solve the challenges in relation to the accounting principles. Further, it is important that it was agreed to keep the ranking confidential. This was a lessen learned ten years earlier when the same companies attempted to develop a benchmark model but failed because ranking was not held confidential.

From the perspective of the District Heating Association and the Regulatory Authorities the main challenge in adopting a benchmarking model whether for regulation or other purposes is the development of a standardized chart of accounts. This was also the point of departure when the six-city companies were initially approached and interviewed. However, the results from the study indicate paradoxically, that it may be the mere existence of benchmark-based data that are hindering the development of the standardized chart of accounts. Authors like Bevan & Hood (2006) have in their studies of benchmarking regimes in the public sector concluded that performance evaluations and rankings of performance indicators are not without problems and that a number of behavioral consequences of benchmarking should not to be ignored.

Whether the benchmarking is based on accounting numbers, or other data, the problems are likely to be the same, – and the technical challenges in defining chart of accounting may be inferior compared with the behavioral challenges.

8. CONCLUSION

The study demonstrates how OIE and NIS provide alternative ways of seeing and offers a synergetic tool to study the role of regulatory benchmarking in organizational change within a sector. NIS demonstrates the way influence is exerted by institutional requirements and fashionable trends, whereas OIE suggest the underlying field level-structures and the mechanisms required to cope with them, while at the same time being impacted by existing routines and path-dependency. So, in addition to lay the ground for achieving greater efficiency and cost control through attending to a benchmarking exercise, the same exercise is also seen as a fashionable project and signals that the attendees are proactive and level with the society at large regarding management control systems. At the same time it

signals to the outer world they are taking extraordinary precautions, and thereby gaining legitimacy.

The six-city members entered into a benchmarking project to see how they may be able to benchmark on a set of key parameters defined by the association together with the authorities. From this study it is clear that organizations can learn from each other, and from each other's experiences, such as, for example, when the six-city members based on their relative performance evaluation are exchanging experiences of more process-related matters. Although when assessing the learning outcome it is important to remember Askim *et al.* (2007), because there are obvious signs of the six-city members using the benchmarking also for agenda setting and decision making, thereby leading to politics. So, instead of benchmarking leading to either learning or politics, in the case of the six-city benchmark project, there are signs of both, indicating these two aspects are not mutually exclusive.

Suggestions for further research

Although key representatives from six independent organizations are involved, the analysis is limited, as it is an embedded single-case study, focusing on the six-city benchmark model project group. The results, therefore, may not be applicable to other organizations in the utility sector in Denmark or elsewhere. The study does, however, have implications for individual not-for-profit enterprises seeking to implement common benchmark routines. For these organizations, the benchmark work may offer a set of practices that can be used as part of a process to enact and add legitimacy to broader management control system change within and even among organizations. There are opportunities for future comparative empirical studies to further our understanding of how benchmark routines are shaped by institutional contradiction and entrepreneurs as well as by the interplay between institutional forces and inter-organizational power relationships.

Remembering Barley and Tolbert (1997), who highlighted the difficulty in spotting organizations or fields of interest where change is going to take place in order to have a 'before and after' design, researchers may have to adhere to retrospective accounts and archival data even if they are subject to rational reconstruction. In this case interviewing of the key personnel took place at the beginning of the benchmark model project in 2008 to establish accounts of the previous attempt to construct a benchmark model among the same organizations in 2000, before the authorities launched their idea of future benchmark regulation in 2006, so the 'before'-part is in place. Therefore, a natural continuation of this effort would be to launch a follow-up research project when the regulation eventually is going to be implemented in order to establish the 'after'-part.

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APPENDIX 1

Interview guide for Interview 1 (translated from Danish).

THEMATIC FRAMEWORK FOR INTERVIEW 1 (WINTER 2009/2010)

1. Can you tell something about how the benchmarking-work in your organization has developed during the last 10 years?
2. Which employees worked with benchmarking at that time, and how has it developed since then?
3. What relations does your company have towards other district heating companies, authorities, and the Danish District Heating Association? How has these relations changed over time?
4. What concrete experience do you have with benchmarking and the work around benchmarking?
5. What areas of development are interesting for the Danish district-heating sector related to benchmarking?
6. How does your organization work with benchmarking?
7. What is motivating your organizations work related to benchmarking?
8. What is your opinion on your organizations work related to benchmarking?
9. In your opinion, what is the most important happening to benchmarking at this moment?
10. In your opinion, what do you think of the level of information within the sector; does it decrease or increase?
11. If I say Danish district heating companies are similar toe ach other. Why do you think is the reason for this: Impact from the authorities, the companies imitating each other or the knowledge and network of the profession?
12. What do you think of the professional level of the Danish district-heating sector and what is your opinion on how the profession has developed? Do you know other sectors, and eventually how are these sectors in comparison?
13. In your opinion, which role do you think benchmarking play in your organization today? Do others in your organization agree?
14. Which problems have you encountered when working with benchmarking? If benchmarking is as important as you express, why haven't worked more with it?
15. How would you like benchmarking to work for you?
16. What must be different for this to happen?

APPENDIX 2

Interview guide for Interview 2 (translated from Danish)

THEMATIC FRAMEWORK FOR INTERVIEW 2 (SPRING 2012)

1. I have been fortunate to follow the six-city members in their benchmark model project. Now I am curios to hear your opinion what you have achieved?
2. What do you use the results from the project for?
3. How do you use it?
4. Who uses it?
5. In your organization, is it only for your personal use or also used towards employees?
6. Do you act different now than before you got this new way to do benchmarking?
7. In your opinion, do you think it has made a difference in the way you think or act in the organization?
8. How do you use accounting numbers in general in the organization? On management level or also at middle management levels?
9. How do you think it could have been if you hadn't had the result from six-city benchmark model project?
10. What kind of education do management and middle management have in your organization (professional managers or engineers)?
11. What areas of conflict do you have between management and technical professions?
12. Accounting may be used in many ways. Is there any link between accounting and the way you work?

SUMMARY

Benchmarking is used in many instances to compare performance through the use of some kind of accounting information, particularly management accounting information. It might look straightforward, but the devil is in the detail: The use of benchmarking requires due diligence and consistency not only with regard to the applied methods and techniques, but also to the expected use of the results.

The thesis studies different aspects of benchmarking, and especially with regard to perspectives and typologies. The application of benchmarking depends not only on the aim of the benchmarking exercise, but also on the relationship between the 'benchmarker' and the 'benchmarked' and how the benchmarking is performed. The thesis shows how technical challenges in defining and agreeing on technical aspects may be inferior compared with the behavioral challenges because of the mere existence of benchmark-based data.

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